A black and white photograph of a forest landscape. In the foreground, there is a calm body of water reflecting the sky and the silhouettes of trees. The middle ground is filled with a dense forest of evergreen trees. The background shows a bright, overcast sky. The overall mood is serene and natural.

Timiskaming Forest

Independent Forest Audit

April 1, 2004 – March 31, 2009

**ArborVitae Environmental
Services**

February 1, 2010

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1.0 EXECUTIVE SUMMARY

This audit has reviewed the management of the Timiskaming Forest between April 1, 2004 and March 31, 2009, a period that covered the last two years of the 2001 FMP term, the development of the 2006 FMP, and the first three years of activities under that plan. The former ShiningTree Forest was amalgamated into the Timiskaming Forest in 2006. An Independent Forest Audit was conducted on the (pre-amalgamation) ShiningTree Forest in 2006, and so this audit covered the operations on the ShiningTree portion of the Timiskaming Forest for only the last three years of the audit term.

The Timiskaming Forest is an exception to the recent severe downturn of the forest industry in Ontario. While harvesting across northern Ontario is down by about 50% from its peak in the early years of this decade, harvest rates on the Timiskaming Forest have remained high. We attribute that to several factors including good operational management, sound governance, and the fact that most of the mills to which the company supplies wood have remained operational during the economic downturn.

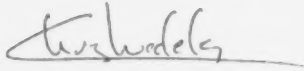
This audit found that, overall, the quality of management of the Timiskaming Forest was very high. This is evidenced by the fact that there are relatively few recommendations identified in this audit. Evidence of sustainability identified by this audit includes:

- the planning requirements for the forest have been well implemented; the analysis of management alternatives was carried out according to the required process and the selected alternative struck a reasonable balance between economic objectives and maintenance of environmental quality;
- the consultation requirements were all met through the planning process and both LCCs expressed satisfaction with the involvement and support provided by the MNR and company;
- First Nations and Aboriginal communities expressed satisfaction with the overall level of involvement in forest management planning;
- the compliance performance of the company was very good;
- the silviculture program was generally excellent - good results were found for regeneration and tending;
- the free-to-grow program that was implemented exceeded by double the area planned for assessment.
- AOC prescriptions were well considered and no issues were identified in implementation; and
- the site inspections carried out during the audit indicated successful implementation of the plans being audited and no serious issues regarding effectiveness of treatments were identified.

The Ministry of Natural Resources has contributed significantly to the good quality of management of the Forest. However, there remain several issues associated with the ShiningTree portion of the management unit. Several recommendations issued in the 2006 Independent Forest audit have not been addressed, and so are reinforced in this audit. This audit also recommends that MNR reconcile the staffing level at the Gogama Area office with the responsibilities of the staffing contingent there, as the audit team believes that the responsibilities exceed the capacity.

Although several of this audit's recommendations relate to issues focused on the former ShiningTree Forest, the audit team does not intend this to reflect poorly on the MNR staff in the Gogama Area office. They, as much as the other professionals with roles in managing the Forest, have contributed significantly to the high level of performance.

In summary, the audit team concludes that management of the Timiskaming Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by TFAI. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest Licence #542247 for a further five years.



Chris Wedeles,
Lead Auditor

2.0 TABLE OF AUDIT FINDINGS

Recommendation on Licence Extension
The audit team concludes that management of the Timiskaming Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by TFAI Forest Inc. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest Licence #542247 for a further five years.
Best Practice
TFIA and its shareholders are to be commended for avoiding the use of two-pass harvesting.
Recommendations Directed to the SFL Holder/MNR District(s)
1. MNR shall ensure that it follows the review protocols and timelines set out in an "AWS Review Protocol" and "AWS Review Timelines".
2. MNR Timmins District shall complete its review of the 2005-06 Annual Report for the former ShiningTree Forest and update the status of the document on the FI portal accordingly.
3. NE Region MNR and Kirkland Lake District MNR shall lead an effort to find a workable approach to correcting errors in the FRI that are found in the course of operations on the Timiskaming Forest, involving the Company as appropriate.
4. By December, 2010, MNR Timmins and Kirkland Lake Districts, in consultation with TFAI shall complete an assessment of the values information on the ShiningTree portion of the Forest. The assessment should consider the currency and accuracy of the information, updating procedures, and its utility in forest management planning. The product of this exercise should be a written assessment with steps to address any issues identified.
5. The Company shall monitor the roadbed and sides immediately leading to the Hanover Creek Bridge to ensure that it remains stable.
7. MNR shall increase the level of compliance monitoring on the former ShiningTree portion of the Forest so that it carries out a consistent and appropriate level of compliance monitoring on all parts of the Timiskaming Forest.
Recommendations Directed to Corporate MNR
6. By December 2010 Corporate MNR in collaboration with Timmins District MNR, shall reconcile the staffing capacity at the Gogama area office with the responsibilities of the staffing contingent.
8. Corporate MNR shall assess the FI Portal's ability to accurately and simply track milestone dates associated with the submission, review and approval of forest management planning documents, and shall revise the system as necessary to ensure that this capacity exists.

3.0 INTRODUCTION

This chapter provides context for the audit, both in terms of the audit basis and process and in terms of the Timiskaming Forest. Section 3.1 provides a high-level description of the audit scope, process, and input received – a more detailed description can be found in Appendix 4. The key characteristics of the Timiskaming Forest, and some key issues that have created challenges in past audits and plan periods are identified in sections 3.2 and 3.3, respectively. These issues were among those that merited special attention during the audit. The chapter concludes with a summary of input received into the audit.

3.1 AUDIT PROCESS

The Crown Forest Sustainability Act (CFSA), and one of its Regulations (160/04), directs the Minister of Natural Resources to conduct a review of each of the province's managed forests every five years to ensure that the licensee has complied with the terms and conditions of its licence, its forest management plan and other regulatory requirements. A detailed description of the scope and process of an IFA is set out in the Independent Forest Audit Process and Protocol (IFAPP), which contains approximately 150 individual audit procedures.

The regulation stipulates that the audit is to assess the compliance of forest planning and operations with the CFSA, the Forest Management Planning Manual (FMPM), and applicable guides and regulations, and the compliance of the licensee with the Sustainable Forest Licence (SFL). The effectiveness of operations in meeting plan objectives, improvements made as a result of prior IFA results, are also to be assessed. The IFAPP also requires the audit team to provide a determination regarding the sustainability of forest management and whether the term of the SFL should be extended (the Regulation also includes the latter requirement).

The Timiskaming Forest, for which Timiskaming Forest Alliance Inc. (TFAI) holds the SFL, was last audited in 2004. In 2006 the former ShiningTree Forest was amalgamated into the Timiskaming Forest. Also, in that year an Independent Forest Audit was performed on the former ShiningTree Forest. So the Timiskaming Forest now is larger¹ than it was when the previous (2004) audit took place. This IFA covers the five-year period from April 1, 2004 to March 31, 2009, and so includes all operations on the area encompassed by the pre-amalgamation Timiskaming Forest and all operations which have occurred since 2006 on that part of the present forest which was formerly the ShiningTree Forest. The most recent FMP for the Timiskaming Forest became effective April 1, 2006, and so encompasses the post-amalgamation Forest.

An important note about context of the IFAs is that they review the performance of both the Licence holder and the MNR. In other words, the accomplishments of both parties with responsibilities related to forest management are covered by the audit. A more detailed description of the audit process is provided in Appendix 4

ArborVitae Environmental Services Ltd. undertook this IFA using a five-person team. Profiles of the team members, their qualifications and responsibilities, are provided in Appendix 6.

¹ The former ShiningTree Forest encompassed approximately 320,000 ha of Crown Managed Forest.

3.2 MANAGEMENT UNIT DESCRIPTION

The Timiskaming Forest is located in northeastern Ontario (Figure 1), abutting the Quebec border. The larger communities contained within the forest include Kirkland Lake, Elk Lake, Matheson, Gogama, and Englehart, where the TFAI office is located. The Forest also encompasses the lands of three First Nations: Wahgoshig, Matachewan and Mattagami. The Timiskaming Forest is a relatively recent amalgam of several Forests. The SFL forming the Timiskaming became effective on April 1, 1998 when three former Crown Management Units (Watabeag, Elk Lake and Timiskaming Crown) were merged. As described above, the ShiningTree Forest was amalgamated into the Timiskaming Forest in 2006.

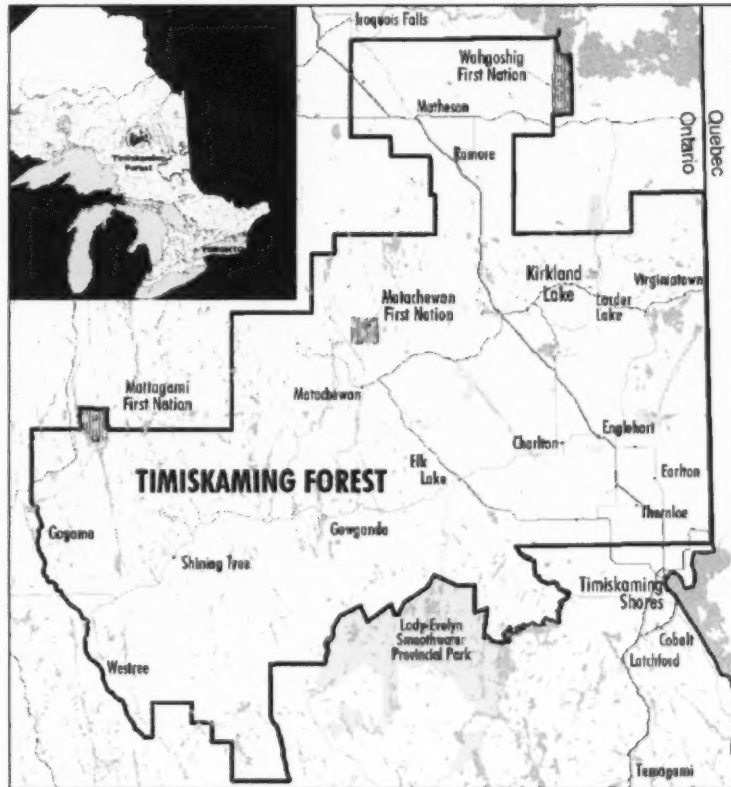


Figure 1. Timiskaming Forest Map. Inset shows location of the Forest in Ontario.

TFAI is a consortium of forest industries, ranging from small independent logging operators to large companies. At present, six of the nine shareholders are forest products manufacturers and three are independent logging operators. A number of acquisitions and share transfers have occurred since twelve shareholders were independent logging operators.

The Forest lies primarily in the Kirkland Lake and Timmins administrative districts of the MNR, however small portions are also in the Sudbury, Cochrane and North Bay districts. The Kirkland Lake district is the lead for administration of Crown forest management activities. The forest encompasses approximately 15400 km² of which approximately 12,500 km² is Crown Managed Forest (Table 1).

Table 1. Area Description of the Timiskaming Forest (Source 2006 FMP, Table FMP-1)

Land Class	All Land Ownerships ^a	Crown Managed Forest
Water	92,644	88,089
Non-forested Land	85,856	7,165
Non-productive Forest ^b	178,080	132,313
Productive Forest ^c	1,182,253	956,698
Total	1,538,832	1,184,262

a - Includes Crown Managed Forest, Parks, Private, and Federal Land

b- Include areas incapable of growing commercial trees, such as muskeg, rock, brush, etc.

c- Includes all forest areas capable of growing commercial trees

The Timiskaming Forest is predominantly (about 90%) boreal in nature, and is dominated by typical boreal tree species such as trembling aspen, jack pine, white birch, and black spruce. The remainder of the Forest is in the Great Lakes-St. Lawrence forest region and the transitional zone between it and the boreal. The most notable species there are red and white pine; some tolerant hardwoods, such as sugar maple, red maple, and yellow birch also occur. As is evident from Figure 2, the forest is relatively young, with most of the area encompassed by forest younger than 80 years. This is not only a function of the normal disturbance regimes of boreal forests, but specifically reflects the effects of three large fires, which occurred in 1916, 1922, and 1941, and which burned more than 730,000 ha.

The Timiskaming Forest is an exception to the recent severe downturn of the forest industry in Ontario. While harvesting across northern Ontario is down by about 50% from its peak in the early years of this decade, harvest rates on the Timiskaming Forest have remained high. For the period 2001-2006 (in which the Timiskaming Forest did not include the ShiningTree) and for the first three years of the 2006 plan period, harvesting on the forest has been approximately 87% of that planned by area, and has exceeded 100% of that planned by volume. The clearly exceptional state of management on the Forest is likely due to several factors including good operational management, sound governance, and the fact that most of the mills to which the company supplies wood have remained operational during the economic downturn.

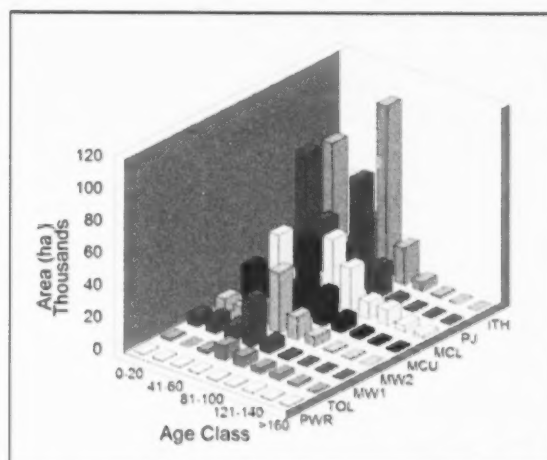


Figure 2. Age-class Distribution of Forest Units (Source 2006 FMP, Table FMP-9).

The Timiskaming Forest provides a wide variety of recreational opportunities and is well accessed. The Forest has one of the highest densities of moose in the province, and provides habitat for all the typical boreal and Great Lakes-St. Lawrence forest wildlife species, including bear, deer, lynx, marten and a wide variety of songbirds. The FMP provides more detailed information regarding the species of interest on the Forest.

3.3 CURRENT ISSUES

This audit has not identified any extraordinarily serious issues related to management of the Forest. One issue regards the capacity of the Gogama Area office to meet its obligations related to the Forest. Approximately 30% of the Forest is in Timmins District, for which the Gogama Area office has responsibilities. Staff there work diligently, but given the breadth of their responsibilities and the very high turnover, there are indications that the capacity is not consistent with the Office's responsibilities.

Poplar decline in the northern portion of the Forest is a known issue. The aging poplar there is suffering considerable decline in quality as it ages. These stands are now about 90 years old, having been established largely after the Matheson fire in 1916. Veneer yield has declined considerably and continuous infestation of forest tent caterpillar is accelerating the decline. The primary concern is regeneration of the sites. This topic was explored in this audit and we are satisfied that the company and MNR have a sufficient handle on the situation such that no recommendations from this audit are necessary.

The Forest has been well served by the Gogama and Kirkland Lake LCCs. Unfortunately the capacity of the Gogama LCC has declined and now only a small core of members participates routinely. The Committee is in danger of falling below the level which can reasonably continue to function effectively. Because the Forest is so large and because of the rich history in the Gogama area, it would be extremely undesirable to lose representation from that portion of the Forest. The Committee and the MNR are working together to address this issue.

Another issue relates to the friction which exists between some parties involved in forest management, centered on the Gogama Area MNR (TFIA, Kirkland Lake MNR and Timmins District MNR). This issue was identified in the previous audit of the ShiningTree Forest, and, as described by staff from both TFAI and the MNR "not much has changed to the better". The audit team hopes that the professionalism of MNR and company staff will help those involved recognize the benefits that could accrue from a better rapport.

Although not an issue related to management of the Forest, we note that operations on the Timiskaming Forest have largely been bypassed by the maelstrom which has hit the industry in Ontario. Although there are some indications (and hopes) of a turnaround in the Forest industry in the not too distant future, staff and management are aware of the need to remain vigilant to ensure that the Forest remains a good news story.

3.4 SUMMARY OF CONSULTATION AND INPUT TO AUDIT

We received a reasonable response to the solicitations for public comment. Twelve survey responses were provided. Of these a slight majority indicated that the respondents thought that the forest was being managed sustainably. We received no responses from the newspaper advertisements.

The audit team met with members of four First Nations with an interest in the Forest and conducted interviews with ten members of the Kirkland Lake and Gogoma LCCs. We also met with and/or had discussions with all staff of TFAI, and many MNR staff from the

Kirkland Lake and Timmins Districts, including the District Managers, Area Supervisors, Foresters and Biologists. Discussions with professional staff covered the gamut of topics considered in this audit. Discussions were frank and all staff responded professionally to requests for information.

More detail on inputs into the audit is provided in Appendix 4.

4.0 AUDIT FINDINGS

4.1 COMMITMENT

The company provided documentation to indicate that significant thought and consideration has been given to expressing its commitment to managing the forest wisely. This documentation included the minutes from meetings of the Board of Directors when Mission Statement and commitments are re-affirmed annually. The Mission is reflected in the daily activities of the organization's employees and is evident in the company's organized and comprehensive approach to forest management.

The Ministry's commitment is expressed in the myriad of government publications. Ministry staff in Kirkland Lake and Gogama also demonstrated a high level of commitment to wise management of the Forest.

4.2 PUBLIC CONSULTATION AND ABORIGINAL INVOLVEMENT

The key finding of this audit is that the company and MNR have both truly exercised best efforts in engaging and informing the two LCCs and in dealing with requests and issues brought up by LCC members. Interviews with members of both LCCs found that they are generally satisfied with the support they receive from MNR and the interaction with the company. Both MNR and the company are very pro-active and have developed very good relationships with LCC members and Aboriginal communities, that they all felt very good about their interactions with the company and MNR.

Although there was good participation by the Gogama LCC during plan development, one present concern is that it has been reduced to a very small core of active participants. The community of Gogama is small and hence there are relatively few people available to populate the LCC. The present core of participants is very active and dedicated and have the support of the MNR District to attempt to get back to a more practical size.

One concern often expressed to the audit team by members of the Kirkland Lake LCC related to the frequent and somewhat confusing use of technical language. We encourage MNR and company individuals to continue to be aware that many LCC members are not well-versed in some technical aspects of forest management and that there needs to be attention paid to clear and non-technical use of language.

First Nations and Aboriginal communities requested a separate consultation process. There are nine Aboriginal communities that expressed interest in the Timiskaming FMP. Two of these First Nations expressed that they want to be kept informed of developments but would not actively participate in the planning process (Sagamok, and Whitefish Lake First Nations). The Audit Team conducted interviews with

representatives of the Mattagami First Nation, Matachewan First Nation, Beaverhouse Aboriginal Community and Temagami First Nation. All representatives interviewed were satisfied with their involvement in the planning process and their relationship with MNR and the company. While concerns over specific issues such as harvest blocks, allocation of harvesting contracts, spraying, traplines, exist, they all felt that there were good opportunities to meet and communicate with the company and MNR to address them.

All notices, ads, and invitations to First Nations communities, and invitations to inspect Annual Work Schedules were issued as required in the planning processes. The documentation regarding the formation of LCCs, their Terms of Reference, Purpose and minutes were all in compliance with the requirements. The Annual Reports were presented to the LCCs and feedback to the planning team was good during the planning period.

4.3 FOREST MANAGEMENT PLANNING

During the audit period, the 2006 FMP for the Timiskaming Forest was prepared according to the 1996 FMPM, with a considerable amount of direction from the 2004 FMPM. The 2006 FMP development and approval was on time and there were no delays in operations. Overall, the 2006 FMP development process was very successful.

A key document that helped the planning process was the *"Roles and Responsibilities for the Administration of the Timiskaming Forest"*, which designated Kirkland Lake District as the lead with input from the Gogama Area office of the Timmins District for the former ShiningTree portion of the forest. This has been effective in helping improve the administration of the Timiskaming Forest.

The Planning Team followed the requirements in identifying a preferred management scenario. The Team evaluated four distinct management alternatives – three mandatory scenarios and a fourth which became the selected management alternative. Two scoping runs were also done. The selected management alternative was able to provide a very steady flow of spruce, pine and fir and birch. Projected poplar harvest volumes were more variable, due to a combination of impacts of current age class structure, anticipated poplar decline, and implementation of the natural disturbance pattern emulation guide. Overall the projected wood supply and harvest profile appear sustainable.

Annual Work Schedules

There were eight annual work schedules prepared, reviewed and approved during the audit period. All were very thorough, submitted and approved on time. An issue was identified related to the review of AWSs. As explained in the discussion of Recommendation # 1, MNR's Gogama Area/Timmins District had difficulties meeting its commitments to provide timely review input on AWSs.

Annual Reports

There were seven annual reports associated with the audit period. In general the reports were of good quality and submitted on time, and MNR met its review commitments for the most part.

We note that the MNR Gogama Area/Timmins District has not yet indicated approval of the 2005-06 AR for the ShiningTree Forest. The company addressed the MNR District and Regional comments on the first submission of the AR and then re-submitted the document with the required timelines. As described in Recommendation # 2, the MNR should attend to its obligation to approve the document.

Amendments, AWS Revisions and Changes to Operations.

There was a relatively modest number of amendment requests during the audit period – 35 administrative, and 7 minor (plus 4 which were withdrawn). Amendments are well documented and meet FMPM requirements, and were appropriately classified. The MNR and company maintain an up-to-date summary.

We note that the length of time taken to provide reviews on amendment requests often exceeds the 15 days identified in the Forest Information Manual. During the 2001-06 ShiningTree and Timiskaming plan periods, reviews of administrative and minor amendments averaged 34 and 67 days respectively. A recommendation (Recommendation #6) in the 2006 ShiningTree IFA directed the MNR to improve its performance in this regard. During the 2006-2009 period reviews took 30 and 88 days respectively. While it is acknowledged that the average number of days still exceeds the FMPM direction, we note that most of the reviews are completed in close to the required duration, but that some outliers, which took a long period of time to approve, skewed the averages. In spite of the fact that some reviews still take a long time to approve, we note that this is partly a function of the fact that staff from two MNR districts need to review the requests. Furthermore, we note that the *Roles and Responsibilities* document described earlier has led to improvements. Given the improvements, the audit team does not believe a recommendation is warranted, however we note that the MNR districts should continue to strive to improve performance in this area.

During the audit period there was a total of 169 AWS revisions with most (76%) due to tertiary access changes, harvest changes and water crossings. This is not an unreasonable amount of revisions given the scope of management which occurred on the Forest and highlights the challenges associated with planning tertiary access locations and harvest blocks. The AWS revisions were well documented and appropriately classified. Furthermore, we note that the 2001 and 2006 FMPs for the Forest were written using the 1996 FMPM. The subsequent version of the FMPM (2004), under which the 2011 FMPM is being written, has more flexibility in the planning of operational components of management activities. This revised planning approach should result in considerably fewer AWS revisions.

Relatedly, there are from 10 – 20 appendments each year on the Timiskaming Forest regarding changes to features in the FRI, most commonly stream features. A number of examples were found where a stream that was identified on the FRI did not exist, or sometimes was in a different location. This can lead to considerable re-planning effort on the part of company, and is addressed in Recommendation # 3.

Values and AOCs

The 2006 FMP contains prescriptions for 34 different types of AOCs; nine are for individual values (e.g. a specific tourism lodge), and the remainder are for groups of values (e.g. cold water fisheries). We note that some prescriptions will need to be modified in the future to be consistent with the forthcoming Stand and Site Guide, however our review of the present prescriptions found them to be sufficient to protect the values they are intended to address.

The quality of values information for the ShiningTree portion of the Forest continues to be point of irritation between the company and MNR. Two recommendations from the previous ShiningTree IFA related to values have not been adequately addressed (See review in Appendix 3) so a more comprehensive recommendation (Recommendation # 4) is issued.

Marten

The Timiskaming Forest is relatively fragmented, due to the interspersions of agricultural and forested lands, and previous harvesting history. In addition, the fire history has created a relatively young-mid age-class structure (Figure 2). Therefore, the forest is not well-suited to meeting the prescribed requirements for marten habitat. The marten habitat guide² notes that 10-20% of the forest which has the capability to produce marten habitat should be maintained in core areas, each approximately 30-50 km² in size, and that 75% of the area in each core should be comprised of "suitable" stands (i.e. mostly old conifer stands). The marten cores identified for the Timiskaming Forest routinely do not meet these standards. Of the 25 cores identified 8 were less than 30 km² and on average only 42% of their area was in suitable conditions. . MNR and Company staff worked diligently and collaboratively in identifying areas best suited for cores. Although the cores identified do not meet the ideal described in marten guide, we are satisfied that they represent a best effort given the fragmented nature of the forest. Furthermore, we note that model projections show a significant improvement in the area in suitable conditions over the next 40 years.

² Watt, W.R., J.A. Baker, D.M. Hogg, J.M. McNicol, and B.J. Naylor. 1996. Forest Management Guidelines for the Provision of Marten Habitat. Version 1.0 Ontario Ministry of Natural Resources. Queen's Printer for Ontario. 26 p.

4.4 PLAN ASSESSMENT AND IMPLEMENTATION

Harvesting

As described earlier, the Company is one of the few SFL-holders that regularly harvests most of the planned harvest area – in the 2001 FMP period, the Company completed 81% of its planned harvest, and in the first three years of the 2006 FMP period, TFAI was on course to harvest 87% of the planned area. During the period of the 2001 FMP, TFAI harvested 104% of the planned harvest volume, and was at just over 100% (pro-rated) in the first three years of the 2006 FMP. The harvest operations themselves were conducted to a high standard, with good utilization and adequate retention of residual trees and peninsular and insular areas.



Figure 3. Excellent results from slash pile burning at block Roadhouse 120.

The audit team was pleased to see that the FMP prohibited two-pass harvesting, which in the audit team's experience tends to create silvicultural challenges that are either expensive to fix or result in a different future forest than intended in the FMP. In the previous four audits conducted in the boreal forest zone by this audit team (IFA's conducted in 2007 – 2009), two-pass harvesting has created management problems on all of them, and led to specific recommendations in two of the audits. This is the first time this audit team has seen a specific statement in a FMP forbidding two-pass harvesting, and the audit team finds it to be a Best Practice (see Appendix 1 for more detail). While it may surprise some that this is an exceptional practice, the foregoing evidence indicates that two-pass harvesting occurs widely and so the FMP statement meets the IFAPP test that a best practice must be exceptional. A minor amount of rutting was observed on a small number of sites that was insignificant on an overall basis. The audit team was impressed with the almost complete level of slash pile burning, and with the Company's willingness to voluntarily participate in harvest trials, such as the examples of cut-to-shore prescriptions that are part of the new options that will be available in the Stand and Site Guide. MNR's personal use fuelwood program is also efficiently run and provides an important public benefit.

Silviculture

TFAI's silvicultural program was generally excellent. The Silvicultural Ground Rules in the 2006 FMP, as well as the preferred treatment packages, were appropriate for the site conditions on the forest and were comprehensive. All natural regeneration, site preparation, planting, and seeding projects that we visited in the field were of good quality, with complete site coverage and excellent rates of survival and growth, except as noted below. Highlights included innovative treatments which were implemented as

part of TFAI's strategy for conservation management of white pine and red pine, and the use of several different site preparation implements, which provides options for treatments to be better matched to local site conditions and silvicultural objectives. The tending program, which included aerial and ground herbicide applications and pre-commercial thinning treatments, was also well executed. The renewal support program is also good and is sufficient to meet the needs of the regeneration program for the forest.

On some of the sites which had been left for natural regeneration of poplar, the audit team observed that poplar regeneration was patchy and of low quality. These sites were located in the northern part of the Forest, on the Clay Belt. This locale had experienced several years of defoliation due to forest tent caterpillar infestation, which may have been a contributing factor in the reduced abundance and quality of poplar regeneration. This situation is of obvious concern to TFAI, who have responded by planning, implementing and monitoring the effectiveness of a variety of alternative silvicultural treatments on these sites to work towards their successful regeneration. TFAI has recently been awarded Forestry Futures Trust funding to implement projects for the treatment and monitoring of these sites. MNR (Northeast Science and Information) is also aware of the problem and is involved in science initiatives which are investigating causal relationships in poplar decline.

When the amount of area planned for treatment is pro-rated by the proportion of planned area actually harvested, the silvicultural program was fully renewing areas that had been harvested or which had experienced natural depletions. For example, during the 2001-2006 FMP period, 28,906 ha of normal harvest area received renewal treatments, which is 104% of the (pro-rate) planned levels. For the 2006-2011 FMP period, to date 21,938 ha of harvest areas have received renewal treatments, which represents 110% of the area planned. TFAI had met the renewal and tending objectives for the 2001-2006 FMP and is on track to meet the objectives for the 2006-2011 FMP.

Areas of Concern

The audit team inspected approximately 70 AOCs, during the course of the audit, primarily by aerial reconnaissance. We found no violations of prescriptions. Further inspection of compliance records showed no significant infractions or systemic issues.

Access

Over the course of the audit period the company has done a considerable amount of road upgrading, construction and maintenance (almost 40 km of primary and branch road have been constructed). The level of activity has been supported by the provincial roads funding program. Funding levels are related to the average harvest volumes and so the Timiskaming Forest has, since the program's inception in 2005, routinely been among the highest recipients in the province. We reviewed a selection of projects for which funding applications were submitted and found that they all met the program's criteria.

The quality of road construction and maintenance on the forest is generally good; some roads were rough in places, but not beyond a standard reasonable for forest access roads. In addition, the quality of water crossings in the forest is good. Some of the funding available through the roads program was used to reconstruct old crossings, and these were done to a high standard.

One crossing of note reviewed during the audit was the Londonderry (Hanover Creek) bridge on the former ShiningTree Forest. This bridge was reconstructed during the audit period to facilitate harvesting on its far side. Plans to reconstruct the bridge began when the Forest was being managed by Domtar (i.e. prior to management responsibility being



Figure 4 Large culvert installed on South EMU Road (crossing no. 3746) using road program funding. Note the appropriate sloping, good use of rip-rap, and that the culvert is well-seated below the water level

taken over by TFAI). The original engineering design for the reconstructed bridge noted that it should be moved several meters from its former location to eliminate any concern related to undercutting of the road approach by the river. This engineering plan was not implemented, because its direction was likely lost as the various types of direction related to the bridge were developed and in the transition of management responsibilities from Domtar to TFAI.

Recommendation # 5 directs the company to monitor the stability of the road leading up to the bridge.

4.5 SYSTEM SUPPORT

Staffing

One of the issues which arose in various forms through the audit relates to the staffing level in the Ministry's Gogama Area office. MNR staff note that a normal contingent of staff with forestry-related duties in the Gogama office includes a forester, a biologist, five technicians, and an Area Clerk. The Gogama Area includes portions of four SFLs – Timiskaming (approx 30% of the Forest is located in the Gogama area), Spanish (approx. 25%), Pineland (approx 10%), and Sudbury (approx 5%). The forester biologist, and senior technician have long tenures in the office, but there has been considerable turnover in other staff. As documented by MNR staff, during the audit term, staffing of the Gogama office included:

- five different Area Supervisors
- four Area Clerks
- 19 technicians, of whom 10 were in their positions for between 3 and 6 months and 5 of whom had acting assignments ranging from 6 months to almost 2 years.

As a result, of this high level of turnover for technicians, the learning curve for new staff never really gets surmounted and the other professional staff end up with additional responsibilities. In addition, the Area Forester, Area Biologist, and Senior Forestry Technician had secondments for periods of between 6 months and two years, during the audit period. During the secondments the individuals were required to keep the responsibilities of their home positions as well as perform those of their secondment. These three factors (responsibility for portions of several SFLs, high turnover, and secondments which were not backfilled) played out in several ways:

- delays and bottlenecks tend to occur as Area staff attempt to meet their responsibilities for reviewing planning-related documents (e.g. AWSs, ARs) for each of the four forests for which they have responsibilities, on the same schedule;
- compliance monitoring by MNR on the forest has suffered;
- some aspects of values updating are not attended to promptly; and
- tension is added to the already tenuous rapport between the various parties as MNR staff struggle to meet timing commitments.

This audit has recommended (Recommendation # 6) that corporate MNR deal with this by reconciling the staffing level at the Gogama Area office with the responsibilities of the staffing contingent there.

Document Controls and Training

The company was ISO 14001 certified and has a comprehensive document control system in place which includes thorough procedures and protocols for all administrative requirements.

The company has set up a database of all the training provided to staff and contractors which clearly documents training history. The company provided 1349 days of training for the planning period. MNR also has procedures for document controls and all documentation was easily available and complete.

In sum, both the company and MNR have excellent systems in place to effectively manage the planning process in a very transparent way.

Rapport

As is discussed in several places throughout this audit report, the audit team has a very favourable impression of the manner in which the company and both MNR offices with whom we interacted are managing the Forest. Because of the size and complexity of the Forest, sound management requires the strong efforts of all three of these parties. The previous IFA of the ShiningTree Forest noted the strained rapport between the company and MNR Timmins District Staff responsible for dealing with that SFL and a recommendation was made to address the impediments to a better working relationship. We note that the relationship remains strained and that there is also friction between key members of the staff of the two MNR offices. We believe the tension is caused partly by overlapping responsibilities and to some extent by the difficult circumstances in which the Gogama Area staff are working (see Recommendation # 6 and discussion in Section 4.5). We also believe that, to some extent the mindset of antipathy has become engrained in the rapports. The recommendation of the previous audit has not resulted in any notable improvements, however the audit team is reluctant to issue a similar recommendation and instead relies on the professionalism of all staff to recognize the benefits that could accrue from a better rapport. The bottom line is that the forest is being well managed, however we believe that the level of management could be raised to an even higher level if all staff concerned recognized the potential benefits from improved relationships.

4.6 MONITORING

Compliance Inspections

Kirkland Lake MNR District is the lead district for compliance on the Timiskaming Forest, while the Gogama MNR Area Office is responsible for compliance activities on the portion in Timmins MNR District. In general, the compliance inspection program on the Timiskaming Forest is mature and effective as evidenced by the high total number of inspections (1,357) and very low incidence of non-compliance (40). MNR compliance inspections are risk-based with higher risk operations receiving a disproportionate number of inspections. Given this, the low rate of non-compliance is all the more notable. None of the instances of non-compliance were egregious and there were no fines or enforcement actions taken during the audit period. Overall the level of non-compliances has been decreasing. This was confirmed by the site visit portion of the audit and appears to be a reflection of increased training, continuous review of internal procedures, joint meetings, training and an open relationship between the Company and MNR.

There is excellent communication of compliance issues and remedies between the TFAI's operations specialist and the MNR forestry technical specialist who are the respective compliance leads for their organizations. These two individuals also deliver the field portion of the provincial forest operations compliance inspector certification training and inspector re-certification for Northeast Region. Overall the compliance performance on the Forest was very good and the staff of the organizations work well in collaboration.

The number of compliance inspections performed by the MNR on the Gogama Area portion of the forest is very low – too low to meet the MNR's compliance commitments. This same issue was identified in the 2006 IFA of the Shining Tree Forest. This is addressed in Recommendation # 7

Silviculture

TFAI has an excellent system for silvicultural effectiveness monitoring. Field surveys, are conducted at various stages in the management of a stand. These include checks of the forest inventory prior to harvesting, surveys done for the refinement of FOPs, quality assurance surveys conducted on site preparation, tree planting and seeding projects, regeneration assessments, tending needs assessments, acquisition of supplementary air photography for tending blocks combined with field visits to assess effectiveness of treatments, and free-to-grow surveys. During the audit



Figure 5. Example of good-quality silviculture. Red pine plantation at Block Shillington 103

period, TFAI completed the assessment of a total area of 42,468 ha for free-to-grow status.

During the 2001-2006 FMP term, TFAI assessed 44,958 ha of harvested area for free-to-grow status. This achievement was more than double (208%) the forecasted area of 21,628 ha. In addition to assessing normal harvest areas that were scheduled for free-to-grow status according to the silvicultural standards contained in the respective SGR's, TFAI surveyed a large area of backlog sites and Class Y and Z Lands. Of the total area assessed, 78% was found to be successfully regenerated (free-to-grow). For the 2006-2011 FMP term, to date 10,981 ha of normal harvest area have been declared free-to-grow. Of these successfully regenerated sites, 81% would be considered to be silvicultural successes, that is, they had regenerated to the forest unit(s) projected by the respective silvicultural ground rules. The audit team is of the opinion that these results are consistent with the management strategies contained in both the 2001-2006 and 2006-2011 FMPs.

MNR conducts quality assessments of TFAI's silviculture projects through the normal compliance program. Each OMNR District also has a quality assurance program in place to assess TFAI's silvicultural monitoring. There was a high level of congruence between MNR's and TFAI's results for free-to-grow status, as well as the stand attributes which are determined for inventory updating purposes

Forest Information Portal

Although not a significant issue in the greater scheme of forest management, this audit found it extremely difficult to work with MNR's Forest Information Portal to extract some key information regarding AWSs and ARs. This is described in detail in the discussion of Recommendation # 8.

4.7 ACHIEVEMENT OF MANAGEMENT OBJECTIVES & SUSTAINABILITY

Details of the achievement of management objectives of the 2001 and 2006 FMPs are presented in Appendix 2. Almost all objectives either have been met, have come sufficiently close to identified targets to be considered successful, or are on track to being met (although we note that it is premature to assess a number of objectives of the 2006 FMP). The exception to this is the 2006 target related to marten habitat. As described in Section 4.3 the fragmentation and history of the Forest makes attainment of desired marten habitat configurations extremely difficult. The audit team is satisfied that thorough efforts were made to address marten habitat and notes that the marten habitat situation improves through the course of the simulated future.

Very notable achievements on the forest are that harvest and silviculture objectives have been met (or nearly so). This is in stark contrast to most other Forests in the province which have routinely harvested half or less of their projected harvest area.

The Year Ten AR's for the ShiningTree and Timiskaming Forests attempt to assess the sustainability of management using the prescribed indicators in the FMPM. The report author found that there were numerous obstacles associated with an effective analysis of most of these indicators. Complete data did exist for disturbance size and thus the assessment of progress towards the disturbance template could be assessed – progress was evident on both forests, primarily in both the large and small disturbance size

classes. Reaching a point where the disturbance profile approximates the template is a long-term proposition; the high level of harvesting on the Forest enhances the rate of progress. The analysis of other indicators fared less well – amalgamation meant that there were changes to the desired forest condition (RPFO-13), forecasts of managed forest area available for timber production (RPFO-14), landscape pattern /diversity index values (RPFO-15), and projected habitat areas (RPFO-16), the tables reporting trends and matching those trends to projections were not completed on the basis that they are not relevant for the amalgamated forest and because of changes in forest units. For still other indicators (e.g. some of the socio-economic ones, net primary productivity and water flow, for example) values were not calculated in the 2001 FMP or beforehand, and so there was nothing to report. In summary, the evidence in the Year Ten ARs is too scanty to support an assessment of management sustainability.

While the Year ten ARs do not provide much direction in assessing sustainability, the Trend Analysis is useful in this regard. Key findings of that report include that almost 63,000 ha in former barren and scattered lands have re-entered productive status since 1999, and that achievement of silviculture targets has generally improved over the decade since the amalgamation of the previous forests into the Timiskaming Forest.

Evidence of sustainability identified by this audit include:

- the planning requirements for the forest have been well implemented; the analysis of management alternatives was carried out according to the required process and the selected alternative struck a reasonable balance between economic objectives and maintenance of environmental quality;
- the consultation requirements were all met through the planning process and both LCCs expressed satisfaction with the involvement and support provided by the MNR and company;
- First Nations and Aboriginal communities expressed satisfaction with the overall level of involvement in forest management planning;
- the compliance performance of the company was very good;
- the silviculture program was generally excellent - good results were found for regeneration and tending;
- the rate of silvicultural successes, as measured by free-to-grow surveys, and by related elements of the silvicultural effectiveness monitoring program, were consistent with the management objectives in place during the audit term;
- the free-to-grow program that was implemented exceeded by double the area planned for assessment;
- AOC prescriptions were well considered and no issues were identified in implementation; and
- the site inspections carried out during the audit indicated successful implementation of the plans being audited and no serious issues regarding effectiveness of treatments were identified.

The audit team's overall assessment is that the Timiskaming Forest was managed within the bounds of sustainability during the audit period.

4.8 CONTRACTUAL OBLIGATIONS

The minimum balance in the Forest Renewal Trust was maintained at March 31 of each year during the audit period.

TFAI's has made good progress towards meeting their obligations on Class X and Y Lands. Since the last IFA for the Timiskaming Forest for the 1999-2004 period, a total of 2,882 hectares of area has been treated, leaving a net outstanding untreated area of 891 hectares of Class Y and Z Lands. Also notable is TFAI's initiatives to address the regeneration of backlog NSR sites, although there is no specific contractual obligation to do so.

Other contractual requirements were reviewed and found to have been met – Appendix 3 contains a detailed assessment of the obligations and our evaluation of Company performance.

One of the SFL holder's responsibilities associated with an Independent Forest Audit is the preparation of a Trend Analysis (Appendix 7). The intent of the document is to provide an assessment of trends on the forest over its recent management history to provide context for the audit and its findings. As is described earlier, the Timiskaming Forest has a very complex management history – the present Forest is comprised of what was previously six distinct management units spanning five distinct management periods (See Table A of Appendix 7). The task of assembling and analyzing this information so that meaningful information could be extracted was a formidable task and was extremely well done.

4.9 CONCLUSIONS AND LICENCE EXTENSION RECOMMENDATION

This audit has reviewed the management of the Timiskaming Forest between April 1, 2004 and March 31, 2009, a period that covered the last two years of the 2001 FMP term, the development of the 2006 FMP, and the first three years of activities under that plan.

An appropriate theme for this audit would be competence, indicative of the high level of performance found in virtually every aspect reviewed by the audit team, from interaction with the two LCCs on the forest to protection of non-timber values, to harvesting and silviculture. This audit identifies a very low number of recommendations relative to current standards, also indicative of the high quality of management.

Only two topics were apparent through this audit to merit mention as detriments. First, is the friction which exists between the parties involved in forest management, centered on the Gogama Area MNR. This issue was identified in the previous audit of the ShiningTree Forest, and not much has changed to the better. A recommendation around this issue made in the previous IFA has not had any appreciable effect. The audit team hopes that the professionalism of MNR and company staff will help those involved recognize the benefits that could accrue from a better rapport.

The second issue is centered on staffing in the Gogama area office. Over the period of the audit there has been considerable turnover in the technical staff there; that, plus the fact that professional staff have responsibilities related to four SFLs have created a very

challenging situation which has contributed to circumstances giving rise to several of this audit's recommendations.

Although several of this audit's recommendations relate to issues focused on the former ShiningTree Forest, the audit team does not intend this to reflect poorly on the MNR staff in the Gogama Area office. They, as much as the other professionals with roles in managing the Forest, have contributed significantly to the high level of performance.

In summary, the audit team finds that the Timiskaming Forest was well managed during the period under review by this audit. Selecting from the wording choices provided in the IFAPP, the audit team concludes that the management of the Timiskaming Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Timiskaming Forest Alliance Inc. Forest Sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends that the Minister extend the term of Sustainable Forest Licence # 542247 for a further five years.

APPENDIX 1 – AUDIT FINDINGS

Best Practice # 1**Principle 4: Plan Assessment and Implementation**

Criterion 4.3 Harvest: This criterion addresses harvest operations outside of AOCs. Harvest operations must be conducted in compliance with all laws and regulations including the CFSA, approved activities of the FMP including SGRs, AWS and FOPs.

Procedure 4.3.3 Two Pass Harvesting: Determine whether second pass harvest operations are occurring to complete harvest operations as outlined in an FMP that identifies second pass harvest operations.

Background Information and Summary of Evidence: The 2006 FMP explicitly prohibits two-pass harvesting on the Forest. While two-pass harvesting is not prohibited by any MNR requirements, it is generally an undesirable practice. As noted in Section 4.4 this audit team has encountered the practice on the four most recent boreal audits it has undertaken and in every circumstance silvicultural problems ensued. Frequently, the first pass removes the conifer component of the stand, leaving the hardwood until markets improve and it is worthwhile returning to remove it. There are at least two problems with this – sometimes markets do not improve for a period of several years and the harvest has moved on to other parts of the forest, making it prohibitively expensive to return the stand. Secondly, because the stand has relatively little volume after the first pass it is expensive wood and there is little incentive to return to harvest it. Instead, harvesters prefer to cut fully stocked stands. If the second pass is not undertaken, the stand will renew to a hardwood stand with relatively low stocking and the conifer component of the stand will have been lost. Even if the second-pass harvest is delayed for a few years, the growth of hardwood renewal and brush makes it difficult to prepare the site and plant conifer after the second pass. In other words, two-pass harvesting tends to lead to the conversion of mixedwood stands to hardwoods, and those that never receive the second pass are often poorly stocked.

Discussion: Two-pass harvesting tends to be an expedient approach that allows harvesting to continue in the mixedwood part of the forest, but it raises the cost of wood and tends to prevent the silvicultural objectives for the site from being realized. The practice is especially unfair when the second-pass is undertaken by a different contractor than the one who made the initial entry, since the second harvest results in expensive wood.

Best Practice: TFIA and its shareholders are to be commended for doing what is right for the forest and avoiding the use of two-pass harvesting.

Recommendation # 1**Principle 3: Forest Management Planning**

Criterion 3.9 Annual Work Schedules – Direction: The AWS must be consistent with the FMP, the requirements of the applicable FMPM and any other legislative requirements and must work towards achieving the stated objectives and Strategies

Procedure 3.9.1 AWS Preparation: Assess the AWS for consistency with:.....the planning requirements of the FMPM including.....submission, review, and approval.

Background Information and Summary of Evidence: The 2006 ShiningTree IFA found that AWS reviews were taking longer than the 30 days provided in the FMPM and issued a recommendation that the reviews be completed within the allotted window of time. Kirkland Lake MNR, in consultation with TFAI, developed an "AWS Review Protocol" and "AWS Review Timelines" which outline the roles and responsibilities of the parties to ensure timely AWS review and approval. Timmins MNR was aware of the development of these documents and of the role they are intended to play in efficient management of the Forest. One aspect of these guidance documents is that significant issues are to be identified early in the review process to allow time for adequate resolution.

MNR is generally completing their reviews on time, however one point of frustration is that there continue to be significant issues regarding the AWSs are brought forward by Gogama MNR very late in the review process – this occurred both for the review of the 2008/09 and 09/10 AWSs. The late juncture at which the concerns are raised causes difficulties. Adequate time is not available to address the concerns prior to the required submission dates. Furthermore, MNR staff have not been available to engage in follow-up discussions. This has led to unnecessary complications and expenditure of effort on the part of MNR Kirkland Lake staff and the company. This is contrary to the intent of the FMPM direction regarding MNR follow-up to requested AWS revisions which notes that "Staff from the appropriate MNR area of district office will undertake immediate internal review to ensure that the required alterations have been made" (2004 FMPM, p. D16)

Discussion: Staffing issues in Gogama are likely part of the issue here as the Gogama Area did not have adequate planning staff available for the reviews. (The staffing issues of the Gogama Area office, within the context of the Timmins District are discussed in Recommendation # 6) Nonetheless it is incumbent on the MNR to provide reviews in a manner which do not impede the planning process. In spite of the MNR's efforts in developing the "AWS Review Protocol" and "AWS Review Timelines" documents, the process does not seem to be working as smoothly as it should. As the lead district for the Forest, MNR Kirkland Lake should be involved in addressing the situation, even though the issue primarily involves area in the Timmins District.

Conclusion: MNR Timmins needs to conduct the AWS reviews consistent with the direction set out in the an "AWS Review Protocol" and "AWS Review Timelines" documents

Recommendation: MNR shall ensure that it follows the review protocols and timelines set out in an "AWS Review Protocol" and "AWS Review Timelines".

Recommendation # 2**Principle 6: Monitoring**

Criterion 6.5 Annual Report – Direction: For each Management Unit a report will be prepared annually to summarize the forest management activities that were carried out during the preceding year, usually April 1 to March 31.

Procedure 6.5.1: Examine the annual reports for the term of the audit and assess whether the text, tables and maps including digital information is accurate, complete and in accordance with the applicable requirements, including the associated deadlines....

Background Information and Summary of Evidence: The ShiningTree forest is no longer a distinct entity, but outstanding reporting obligations remain. The MNR has not yet indicated approval of the 2005-06 AR for the ShiningTree Forest. The company addressed the MNR District and Regional comments on first submission of the AR and then re-submitted the document with the required timelines. The FI portal states that the resubmission was not accepted. An e-mail in March of 2007 to the company indicated that the Gogama MNR would notify the company when their review of the AR was complete, and this has not yet been done. The MNR should attend to this commitment to "close the books" on the ShiningTree Forest.

Discussion: The 2005-06 Annual Report for the ShiningTree Forest is a relatively important document because it was a ten-year AR, and the last annual report for the Forest as a distinct entity. The MNR should attend to its commitment to indicate whether the report is approved to "close the books" on the ShiningTree Forest.

Conclusion: The company fulfilled its obligations in revising the annual report within the required timelines. The MNR should complete its review of the document and indicate whether the report is approved.

Recommendation: MNR Timmins District shall complete its review of the 2005-06 Annual Report for the former ShiningTree Forest and update the status of the document on the FI portal accordingly.

Recommendation # 3**Principle 3: Forest Management Planning**

Criterion 3.3 Management Unit Description: Purpose: To review the appropriateness of the FMP management unit description and how it was used in plan preparation.

Procedure 3.3.2.1 Forest Resource Inventory for the FMP: Assess.... Whether the FRI has been updated, reviewed, and approved to accurately describe the current forest cover that will be used in development of the FMP ...

Background Information and Summary of Evidence: On average, there are from 10 – 20 appendments each year on the Timiskaming Forest related to changes to features in the FRI, most commonly stream features. A number of examples were found where a stream that was identified on the FRI did not exist, or sometimes was in a different location. Other examples were found where a stream was located in the field that was not shown on the FRI. In these situations, the change in the value is usually verified and approved by MNR, and the issue and its resolution are documented as an appendment. The discovery of an unmapped or mis-located stream means that the road location must be re-evaluated, a water crossing put in or revised, and an AOC laid out. Where a stream is found to not exist, the AOC can be removed.

Discussion: The FRI and the maintenance of values information is the responsibility of MNR. MNR has argued that the cost of updating inventory information to be of sufficient quality to avoid such problems is prohibitive. As a result, the data in FRI is not revised and the same error is carried forward into future plan periods.

The problem with this situation is that operations near the erroneous value often span different plan terms. As a result, when subsequent operations are conducted in the area of the erroneous value, and the error is encountered again, the Company and District are required to repeat the same process of verifying that the information is erroneous and making revisions in planned operations. In effect, the MNR's decision to not update the erroneous information imposes future additional costs on both the Company and MNR.

The audit team suggests that there are intermediate cost options for obtaining correct data to update the FRI – when the MNR staff person verifies the change, which is often done in the field, they could collect GPS data to make the necessary modifications to FRI. Alternately, MNR could agree to pay TFIA staff to collect these data. Other options likely exist also.

Conclusion: MNR should find a way to correct errors that are encountered regarding features in the FRI so that errors are not carried forward and additional costs are not imposed on the Company and District.

Recommendation: NE Region MNR and Kirkland Lake District MNR shall lead an effort to find a workable approach to correcting inventory errors associated with streams that are found in the course of operations on the Timiskaming Forest, involving the Company as appropriate.

Recommendation # 4**Principle 3: Forest Management Planning**

Criterion 3.3 Management Unit Description: Purpose: To review the appropriateness of the FMP management unit description and how it was used in plan preparation.

Procedure 3.3.6 FMP Values Maps: Review use of the values maps in production of the FMP including: whether the series of values maps includes the required content, were produced and updated for each stage of FMP production and provided for use by the plan author;.....management implications of natural resource features, land uses and values on the development of the FMP.

Background Information and Summary of Evidence: The previous (2006) audit of the ShiningTree Forest included a recommendation (Recommendation #2) that *"by April 1, 2007 the MNR in consultation with the company review the quality of the values information in the NRVIS database for the Forest and that MNR revise the database so that it accurately reflects knowledge of existing values and ensure that the data are maintained consistent with the direction in the Forest Information Manual."* No evidence was provided that the MNR and company together reviewed the quality of values information as was required by the recommendation. Another recommendation ((Recommendation #3) required MNR to complete verification of new values consistent with the FIM requirements. Although the Ministry described a process in which updates occur as prescribed by the FIM, the company provided a review of nest values submitted to the MNR Gogama as in need of change (either new nests found or revised locations) over the last 20 months (spanning Feb/08 to July/ 09). Of the nine reported in that period, only five had been changed in NRVIS as of November, 2009.

Discussion: Values information is an important component forest management. The issue of the quality of values information and updating for the ShiningTree portion of the Forest was identified as a significant concern in the 2006 IFA and was even identified (albeit in a relatively minor way) in the previous (2001) IFA when there was a different SFL holder. Although both the company and MNR seem to have grown somewhat used to the situation in which the issue is a irritant in their rapport, this is clearly not a healthy situation. There are three aspects to this problem: 1) some values which are recorded in NRVIS no longer exist in the field (e.g. stick nests which have fallen down); 2) some values which are known to exist in the field are not recorded in NRVIS; and 3) the length of time often taken to update NRVIS with new/revised values information exceeds both reasonable extents, and MNR's obligations as identified in the FIM. Given that Kirkland Lake MNR is the lead district for the Forest and the keeper of the appendment ledger, staff from that district should play a role in addressing the situation.

Conclusion: The ongoing differences of opinion about the caliber of the values information should be addressed through an assessment of its quality.

Recommendation: By December, 2010, MNR Timmins and Kirkland Lake Districts, in consultation with TFAI shall complete an assessment of the values information on the ShiningTree portion of the Forest. The assessment should consider the currency and accuracy of the information, updating procedures, and its utility in forest management planning. The product of this exercise should be a written assessment with steps to address any issues identified.

Recommendation # 5**Principle 4: Plan Assessment and Implementation**

Criterion 4.7 Access- Direction: Road construction, various types of water crossings, including crossing structures, road monitoring, maintenance, aggregates and any other access activities must be conducted in compliance with all laws and regulations, including the CFSA, and approved activities of the FMP, AWS

Procedure 4.7.1 Review and asses in the field the implementation of approved access activities.

Background Information and Summary of Evidence: A new bridge was constructed over Hanover Creek in the ShiningTree Forest during the audit term, replacing an older one that had been in the same location. Plans to reconstruct the bridge began when the Forest was being managed by Domtar (i.e. prior to management responsibility being taken over by TFAI). The original engineering design for the reconstructed bridge noted that it should be moved several metres from its former location to eliminate any concern related to undercutting of the road approach by the river. This engineering note was not included in an DFO's direction to Domtar (Sept. 2003), nor in any subsequent work permits related to the installation. The audit team believes that the concern with the location of the road leading to the bridge was lost during the various levels of correspondence which occurred and during the transition of management of the forest from Domtar to TFAI.

Discussion: The audit team inspected the site and note that, although failure of the road due to undercutting does not seem to pose an imminent danger, the situation should be monitored as high-water events may occur and change the situation. We believe there was no intent of any party involved to circumvent good planning or wise construction of the crossing and its approach.

Conclusion: The approach to the bridge should be monitored to ensure that roadbed remains stable.

Recommendation: The company shall monitor the roadbed and sides immediately leading to the Hanover Creek Bridge to ensure that it remains stable.

Recommendation # 6

The issue dealt with by the recommendation below is not directly covered by any of the criteria or procedures in the IFAPP (although it is related to Principle 5 – Human Resources). Nonetheless, the audit team believes it is an important concern and so we have addressed it. The IFAPP provides auditors discretion to address situations in which there is a critical lack of effectiveness in forest management activities, even though no non-conformance with law or policy has been observed.

Background Information and Summary of Evidence: A number of issues raised during the course of the audit (review of annual work schedules, compliance monitoring, management of values information) related, at least partly, to the level of staffing maintained by the MNR in its Gogama Area office and the breadth of their responsibilities. We note that the Gogama Area office has responsibilities related to four SFLs: the Timiskaming, Pineland, Spanish and Sudbury. As one staff member there noted, the Gogama area "is in the centre of everything and the middle of nowhere." Although only a small portion of some of these Forests overlap with the Gogama area, the lone Forester Biologist, and Senior IRM Technician there have at least some responsibilities related to all these forests. Not only are the workloads high, but as discussed in Section 4.5, there has been so much turnover in technical staff, that those positions have not helped in managing the forests to the extent that they should.

Discussion: Given the breadth of the Gogama Area professionals' responsibilities related to forest management, it is difficult to respond in a timely manner to all the scheduled requirements. For example, Gogama staff are obliged to review AWSs and ARs for all four forests and all the related planning occurs on the same schedule, so they are stretched very thin in attempting to meet the review timing requirements. Furthermore, the extent of turnover in technical staff at the Gogama Area Office has been so high as to provide relatively little assistance in some circumstances related to meeting planning and review obligations of the office. This situation can mean that the input of the staff comes late, or that they are not able to respond in a timely manner to requests for follow-up. Staff from Gogama Area are very dedicated to contributing to wise resource stewardship and find the situation there at least as frustrating as those who are affected in other ways. Regardless of the circumstances, however MNR as a corporate entity has a responsibility to meet its obligations regarding input into the planning and monitoring processes. It is expected that forest management companies meet their comparable obligations and so no less should be expected of the MNR in meeting its related responsibilities.

Conclusion: There are insufficient staff resources at the Gogama Area office to meet all the present responsibilities of that office in a timely manner. The present imbalance puts staff there in a difficult position and may affect the quality of resource management input coming from that office.

Recommendation: By December 2010 Corporate MNR in collaboration with Timmins District MNR, shall reconcile the staffing capacity at the Gogama area office with the responsibilities of the staffing contingent.

Recommendation # 7**Principle 6: Monitoring**

Criterion 6.1 District Compliance Planning and Associated Monitoring: Purpose: To review and assess when an MNR compliance program has been developed and implemented to effectively monitor program compliance and effectiveness in accordance with MNR manuals, policies and procedures.

Procedure 6.1.1: Review the MNR District Compliance Plans in place during the term of the audit.... to determine how forest management activities were to be monitored by MNR and assess whether the actual level of the overall monitoring program was in accordance with the FMP/plans and whether it was appropriate based on evidence gathered through analysis of related criteria, including field audits.

Background Information and Summary of Evidence: The 2006 ShiningTree IFA noted that the number of inspections carried out by MNR in the last two years of that audit period was low –

Compliance Monitoring Levels

Year	Agency		
	TFAI	MNR – KL	MNR – Gog.
06/07	161	46	4
07/08	147	29	4
08/09	144	47	3

only 20 inspections for the two years combined and issued a recommendation to the MNR that the rate of compliance monitoring be increased. This recommendation has not been acted upon. Compliance monitoring levels, as obtained through FOIP queries for the three years

since the completion of the 2006 ShiningTree IFA, are shown in the table above. The very low level of monitoring carried out in the Gogama portion of the forest is apparent. The proportion of operations carried out in the Gogama area is in approximate proportion to its size relative to the whole unit, so considerably more inspections should have taken place.

Discussion: Although the company has a good compliance record, the audit team believes, as was also expressed in the 2006 ShiningTree IFA, that it is important for the MNR to maintain a strong compliance-monitoring presence on all parts of the Forest. This is consistent with the MNR's commitments towards compliance described in its Forest Compliance Strategy³. This situation is related to the staffing issues of the Gogama Area Office, identified in Recommendation # 6

Conclusion: The level of compliance inspections undertaken on the Gogama Area portion of the forest is too low and is not consistent with MNR's commitments and responsibilities.

Recommendation: MNR shall increase the level of compliance monitoring on the former ShiningTree portion of the Forest so that it carries out a consistent and appropriate level of compliance monitoring on all parts of the Timiskaming Forest.

³ Ontario Ministry of Natural Resources. 2007. Forest Compliance Strategy. Queen's Printer for Ontario. 7 p.

Recommendation # 8**Principle 3: Forest Management Planning and Principle 6: Monitoring****Criterion 3.9 Annual Work Schedules and Criterion 6.5: Annual Report**

Procedure 3.9.1 AWS Preparation: Assess the AWS for consistency with:.....the planning requirements of the FMPM including....submission, review, and approval; and

Procedure 6.5.1. Annual Report: Examine the annual reports for the term of the audit and assess whether the text, tables and maps..... [are] complete and in accordance with the applicable requirements, including the associated deadlines.

Background Information and Summary of Evidence: We found it very difficult to track and define the status of the annual reports based on the FI portal summary information. In addition, we could not readily determine when the MNR reviews of the AWSs were completed, based on the information provided through the Portal. It should be relatively simple and easy task to define the status of all planning documents (e.g. FMPs, AWSs, ARs, and FMP amendments and AWS revisions). The current FI portal summaries are not adequate to accomplish this relatively straightforward task. A comparable issue was identified in the 2006 IFA of the ShiningTree Forest, and a recommendation (Recommendation # 13) was issued that the Company and MNR develop a system for accurately tracking milestones and dates associated with the submission, review and approval of forest management planning documents.

It took an experienced auditor on our audit team four hours to define the status of the annual reports for the 2004-09 audit period using the FI portal submission summaries and interviewing staff to verify the findings and interpret the FI portal records. Given that this is a relatively simple task, the fact that such a level of effort is required is unreasonable. The 2006 ShiningTree IFA action plan indicates that MNR Kirkland Lake District will use date stamping and e-mail or FI portal submissions to track planning milestone dates. This does not appear to be adequate as the system is still not able to provide this information in a clear and simple manner.

Discussion: We believe the FI portal should be able to readily define the status of all planning documents. The present system provides many important services, particularly facilitating electronic submission of documents, however we believe some refinement is necessary to make it of more use for relatively simple tasks.

Conclusion: At present the FI portal does not readily provide important review information.

Recommendation: Corporate MNR shall assess the FI Portal's ability to accurately and simply track milestone dates associated with the submission, review and approval of forest management planning documents, and shall revise the system as necessary to ensure that this capacity exists.

APPENDIX 2 – ACHIEVEMENT OF MANAGEMENT OBJECTIVES

Objectives from 2001 FMP

Objective	Targets	Assessment	Comments		
Forest Diversity Objectives					
Emulation of Natural Disturbance: To clearly demonstrate movement towards emulating natural Boreal Forest spatial disturbance patterns (i.e. those remaining after a forest fire) with planned harvest disturbance patterns.	Ave. Dist. Size (% of Area)		Results shown in table below. Movement towards targets was strongest in the four smallest size classes. Overall shape of distribution curve closely resembles that of target.	Future movement towards decreasing the area in large disturbances and increasing in middle-sized disturbance will be necessary to meet target. However, in general the overall distribution of disturbance size is close to the target.	
	Size Class (ha) 1986-2006				
	10 – 130	18.3			
	131 – 260	19.5			
	261 – 520	28.2			
	521 – 1040	18.1			
	1041 – 2500	14.1			
	2501- 5000	1.8			
	5001 – 10000	---			
	10000+	---			
Ave. Dist. Size (% of Area)					
Size Class (ha) 1986-2006					
10 – 130	18.5				
131 – 260	20.3				
261 – 520	25.3				
521 – 1040	20.3				
1041 – 2500	10.9				
2501- 5000	4.7				
5001 – 10000	---				
10000+	---				
Forest Unit Stability: To promote forest unit stability and a balanced age class structure, where the proportional representation of each development stage can provide a long-term predictable and sustainable supply of wildlife habitat and forest products.	Mature/Overmature Targets (2051-2151)		Targets are expressed for many years in the future, so it is difficult to evaluate progress now. In addition, we note that age class definitions of mature and overmature have changed making comparisons difficult. Finally, the comparable objectives for the 2006 FMP have changed so as to target higher levels of mature and overmature age classes.	This objective appears moot now. The more-recent 2006 plan includes more up-to-date targets which are substantially different from those identified in the 2001 plan. This objective was likely of most use in directing	
	FU's	Age Class			Target Area %
	Pj1, Pj2	61+ (mature)			15%
		81+ (Overmature)			5%
	Pr1,Pwr Pwr_H	91+ (mature)			10%
		121+(overmature)			5%
	LC1, SB1	91+ (mature)			15%
		111+ (overmature)			10%

Objective	Targets	Assessment	Comments
To ensure that a suitable proportion of the total area within a forest unit grouping is sustained within the mature and overmature successional stages.	SP1, SF1 91+ (mature) 15% 111+ (overmature) 10% BWP, IH 61+(mature) 15% OH, POP 81+ (overmature) 5% MW1, MW2 61+(mature) 15% 91+ (overmature) 5 %		constraints used in forest modeling.
Transitional Forest Unit: To maintain, or enhance where feasible, the presence of Great Lakes-St. Lawrence/Boreal Forest transitional forest units (i.e. PWR_H, PWR_L, and OH) on the management unit so as to ensure the continued presence of species such as White Pine, Red Pine, Hard Maple and Yellow Birch.	Increase the area in the PWR forest unit grouping (i.e. the Higher stocked white pine stands that have at least 50% Pw species composition and can be managed by shelterwood and the Lower stocked stands that have between 30 to 40% and are managed by seedtree methods) by 50% over current values within 50 years.	During the 2001 FMP term, 19 ha of PRW_H (higher stocked stands) and 33 ha of PRW_L (lower stocked stands) were reported as depleted. During the same period, 681,800 red and white pine seedlings were planted on a variety of forest units.	The renewal effort for red and white pine that was completed during the 2001 FMP term was sufficient to meet this objective.
	Develop Silvicultural Ground Rules that provide treatment packages that convert non- Pwr forest unit stands with a 10 – 20% Pw and/or Pr component to the PWR_L forest unit.	The 2006 FMP contains a set of SGRs for the conversion of non-PWR forest units. Detailed background information on the silvicultural treatment packages is contained in the Supplementary Document "Conservation Strategy for White and Red Pine Management on the Timiskaming Forest"	This objective has been met.
	Maintain the area in the OH forest unit (i.e. predominantly upland tolerant hardwoods and yellow birch) for the first 100 years of the planning horizon	Strategies to maintain and enhance the area of the OH forest unit are contained in the 2006 FMP. These include methods for the identification and management of tolerant hardwood clusters that are not identified by FRI due to their small size.	No harvesting in the OH forest unit was conducted during the 2001 FMP term. Individual tolerant hardwood trees within mixed stands were not harvested but were retained as residuals.
	Develop an operational White Pine/Red Pine management strategy that supports the sustainability of this forest type on	The 2006 FMP includes a "Conservation Strategy for White and Red Pine Management on the Timiskaming Forest" in the Supplementary Documents. This document	This objective has been met.

Objective	Targets	Assessment	Comments
	the management unit as per the recommendations from the 1994 – 1999 Independent Forest Audit .	provides historical information, and describes targets and objectives to enhance the white and red pine forest units, and detailed operational prescriptions to accomplish these.	
	Complete a workshop for TFAI shareholding staff and their contractors, that focuses on White and Red pine and Hard maple and Yellow birch management.	Training for contractors related to the management of red and white pine has not yet been conducted. However, during the audit period the Conservation Strategy for Red and White Pine was developed for the 2006 FMP. There was no harvesting of the OH forest unit during the 2001 FMP term. The 2006 FMP contains a silvicultural strategy and target to hold a workshop for the management of red and white pine and tolerant hardwoods. TFAI staff informed us that they will conduct the workshop next fiscal year (2010-2011), since there will be numerous training requirements for the implementation of the Stand and Site Guide and the intent is to coordinate these training requirements.	Good progress has been made, and an explicit plan is in place to complete this objective. Actions are pending.
Social and Economic Objectives			
Harvest Level: To manage the forest resources of the Timiskaming Forest to provide the maximum sustainable and predictable wood supply to TFAI shareholders and shareholder facilities.	Annual Harvest Targets: SPF: 455,705 m ³ ; Po: 307,861 m ³ ; Bw: 95,335 m ³ ; Pw/Pr: 4,797 m ³ ;	The annual harvest targets set in the plan were partially met during the plan period. The average SPF harvest was 515,000 m ³ /yr, Po was 231,670 m ³ /yr, white birch was 37,800 m ³ /yr and the pine harvest was approx 1,500 m ³ /yr.	All harvest targets increased in the 2006 FMP, compared to the 2001 FMP, as a result of the addition of the ShiningTree Forest to the Timiskaming Forest.
Personal Fuel Use: To provide opportunities for individuals to harvest fuelwood for personal use.	Make available 5,000 cubic metres of white birch annually for personal use fuelwood harvesting opportunities.	A total of 9,234 m ³ of white birch was cut for personal fuelwood use, for an average of approximately 1,850 m ³ /yr.	There is no estimate of the volume of white birch that is made available, however areas for fuelwood are

Objective	Targets	Assessment	Comments
			identified each year and permits are readily available in MNR District offices. These measures appear to meet the intent of the objective.
Commercial Fuelwood: To provide opportunities to TFAI shareholders and, if possible, other individuals to harvest fuelwood for commercial use.	no specific target identified	During the plan period, 7,204 m ³ of commercial fuelwood was harvested, all of it by shareholders.	With no targets, it is difficult to evaluate whether the specific objective has been met. However, there seems to be sufficient fuel class timber available to meet existing demand and so objective is effectively met.
Integrated Resource Management: To coordinate forest management activities such that benefits to all users are optimized while conflicts resulting from forest operations are minimized.	TFAI to hold an annual meeting with tourist outfitters, trappers, Bear Management Area operators, etc. at the time of AWS approval to further inform these stakeholders of upcoming annual scheduled activities.	To be confirmed	
Social and Economic: To provide a sustainable wood supply to ensure that the communities that depend upon the forest industry for employment and stability continue to benefit from forest management.	To complete a socio-economic impact analysis for each management alternative, and, in consultation with the Local Citizens Committee, include the results in the analysis of management alternatives.	The 2004 IFA reported that "TFAI has completed sufficient modeling to ensure the predicted wood supply is as accurate as is possible with currently available information. Shareholders have full access to all wood supply projections, creating a solid platform on which to base investment and hiring decisions."	This objective would have been addressed at the time of 2001 plan development and the 2004 IFA assessed the development process and content of the 2001 FMP.
Cultural Heritage: To provide for the continued identification and protection of the Cultural Heritage	Properly locate, map and protect known Cultural Heritage values and high potential Cultural Heritage sites.	Field inspection showed good protection of cultural heritage AOCs. AOC prescriptions are appropriate. No compliance issues with these sites.	Target attained.

Objective	Targets	Assessment	Comments
resources found within the Timiskaming Forest	The TFAI will maintain a database of all areas that have received a Stage II archaeological assessment.	TFAI developed a simple electronic database to house this information. Hardcopies are also kept.	Completed
Forest Cover Objectives			
Marten Habitat: Provide suitable marten habitat on the TF.	To maintain a minimum of 150,000 ha of preferred marten habitat during each 10-year term.	This aspatial target was a modeling constraint, so its achievement is axiomatic.	
Moose Habitat: To ensure critical moose habitat components are retained, and enhanced where feasible on the Timiskaming Forest.	To maintain preferred winter moose habitat at 175,000 ha per year for the 150 year modeling horizon	As above	
Other Values: To ensure appropriate protection of all known fish and wildlife, recreational, commercial and other values on the Timiskaming Forest Management Unit.	Update and maintain the 'Natural Resource Values Information System' (NRVIS) database with all known values documented for both the development and implementation of the plan.	As described in the audit report, there are issues associated with keeping the NRVIS database current for the ShiningTree portion of the forest.	Addressed in Recommendation # 4
Species at Risk: To protect Vulnerable, Threatened, Endangered, and Rare species that inhabit the Timiskaming Forest.	To protect all known/identified habitats of these species	AOCs associated with known SAR are included in the FMP. No compliance issues associated with these AOCs	This objective has been met
Silviculture Objectives			
Available Crown Area: To maintain the Total Crown Area Available for timber production.	To maintain the Total Crown Area Available for timber production.	Our assessment of regeneration activities did not reveal any problems or issues with the effectiveness of regeneration treatments. All of the renewal treatments that we observed were of high quality. In the northern Clay Belt portion of the forest, on some sites, aspen regeneration has been less abundant than	This objective has been met.

Objective	Targets	Assessments	Comments							
		expected, and in some cases of lower quality, particularly older stands and those affected by the recent forest tent caterpillar infestation. Where necessary, conversion treatments were being undertaken to bring these areas back to full production, as mixedwood forest units. The total area regenerated during the 2001 FMP term was in line with the forecast level.								
Regeneration: To regenerate all harvested lands to a satisfactory condition, using a combination of natural and artificial methods, to ensure long term forest health. To ensure that the planned silvicultural program will support current and future harvest levels in a cost effective manner.	To regenerate recently harvested areas to the following annual levels for the first 5-year operating term: - 17,725 ha using extensive silvicultural treatments (i.e. natural regeneration) - 4,203 ha using basic silvicultural treatments (i.e. Aerial seeding or refill plant) - 12,258 ha using intensive artificial regeneration (i.e. tree planting)	The area harvested during the 2001 FMP term was approximately 81% of forecast. Thus, regeneration forecast should be scaled back proportionally, since less area was available for renewal. During the 2001 FMP term, 31,350 ha was regenerated, which corresponds to 104% of the pro-rated forecast. The relative proportions of natural and artificial regeneration corresponded well with the forecasted levels.	This objective has been met.							
	To collect seed from a variety of seed sources from the Timiskaming Forest.	During the audit period, seed was collected from a variety of locations in the different seed zones through the general collection program, as well as from the seed orchards for zone 24 and 25 which supply improved seed for use on the Timiskaming Forest.	This objective has been met.							
	To utilize improved seed from seed orchards.	The table below shows the use of improved seed on the Timiskaming Forest during the 2001 FMP period. <table><tr><th rowspan="2">Grow Year/Plant Year</th><th colspan="2">% seedlings which were grown using improved seed from seed orchards</th></tr><tr><th>Jack Pine</th><th>Black Spruce</th></tr><tr><td></td><td></td><td></td></tr></table>	Grow Year/Plant Year	% seedlings which were grown using improved seed from seed orchards		Jack Pine	Black Spruce			
Grow Year/Plant Year	% seedlings which were grown using improved seed from seed orchards									
	Jack Pine	Black Spruce								

Objective	Targets	Assessment			Comments
		2003/2004	49	12	
		2004/2005	46	40	
		2005/2006	56	40	
	To plant approximately 25,647,619 tree seedlings annually for the first 5-year operating term on the Timiskaming Forest.	During the 2001 FMP term, 26,184,700 tree seedlings were planted on the Timiskaming Forest.			This objective has been met.

Objectives from 2006 FMP

Objective	Targets	Assessment	Comments
Forest Diversity Objectives			
Emulation of Natural Disturbance: To provide for a distribution of disturbance patches that more closely resembles the expected size, composition and age produced by wildfire.	Planned harvest blocks and resulting disturbance perimeters to have a total area and frequency in each disturbance patch size that progresses towards Northeast template	All blocks planned to date are consistent with moving towards disturbance template	As the target speaks to planned blocks, it is likely to be achieved.
	Meet the planned insular and peninsular residuals by forest type in accordance with NDPE guide	All blocks planned to date are consistent with NDPE guide	This target really requires compliance with NDPE guide, so is likely to be achieved.
Forest Unit Stability: To promote balanced age class structure for all forest units while maintaining old growth that is representative of historical levels.	Maintain forest unit representation within the bounds of natural variation (i.e. +/- 20% of natural benchmark scenario)	SFMM modeling was constrained to meet this target. So it is likely to be achieved	Target requires adherence to plan, so it is likely to be achieved.
	Maintain % of mature and overmature representation for each forest unit groupings as described in Table 22	As above	As above
Transitional Forest Unit: To maintain on the unit and enhance were ecologically and economically feasible, the present of GLSL/Boreal Forest transitional species....in order to ensure their continued presence.	Maintain the total area of OH1 as of 2006	To date in the 2006 FMP term, 0.4 ha of OH forest unit have been reported as being harvested.	
	Track silvicultural efforts to maintain or increase the presence of these species and report on this in ARs and RPFO.	Given the very low level of harvesting to date, and since only two years of renewal operations have been reported, for the years 2006/2007 and 2007/2008, it is too early to gauge progress towards this objective.	Too early to gauge progress towards this objective.
	Provide a workshop for TFAI shareholding staff and their contractors for hard maple and yellow birch management.	This workshop has not yet been conducted.	Pending
White and Red Pine: To maintain and enhance	Increase the PWR forest unit grouping by 50% over the current	To date in the 2006 FMP term, 3 ha of PWR forest unit have been reported as being	Too early to gauge progress

Objective	Targets	Assessment	Comments
where ecologically and economically feasible, the presence of White Pine and Red Pine ...in order to ensure their continued presence and in an effort to maintain current harvest levels.	values within 50 years.	harvested. Given the very low level of harvesting to date, and since only two years of renewal operations have been reported, for the years 2006/2007 and 2007/2008, it is early to gauge progress towards this objective. However, tree planting objectives to date have exceeded the FMP targets (see below).	
	Plan an average of 100,000 white and/or red pine seedlings annually	To date in the 2006 FMP term (after two years of reported operations), an average of 181,900 red and white pine seedlings have been planted annually.	Progress towards this target is on track.
Social and Economic Objectives			
Harvest Level: To manage the forest [to provide] the maximum sustainable and predictable wood supply to TFAI shareholders and shareholder facilities.	Harvest Targets: SPF five-year target: 2,987,485 m ³ ; Po five-year target: 1,812,020 m ³ ; Bw five-year target: 721,570 m ³ ; Pw/Pr five-year target: 23,985 m ³ ;	After the third year of the FMP, the average annual SPF harvest is roughly 645,000 m ³ , and the average poplar harvest has been 397,000 m ³ /yr. These levels readily exceed the plan targets. On the other hand, the birch and pine harvests are below the plan targets and the planned harvest volume from FMP-21. The average white birch harvest has been 72,403 m ³ /yr while the pine harvest has been about 1,500 m ³ /yr.	The actual average SPF and Po harvest volumes for the first three years of the 2006-2011 period were 8 and 9% higher than the FMP targets, respectively. On the other hand, the actual birch harvest was 92% of the FMP-21 target. Little of these species has been harvested in the first three years of the FMP.
Personal Fuel Use: Identify areas for individuals to harvest fuelwood for personal use.	Identify 10,000 m ³ of Bw annually for personal fuelwood harvest opportunities	In the first three years of the FMP, an average of 1,890 m ³ /yr of white birch was harvested for personal fuelwood. There is no estimate of the volume of white birch that is made available, however areas for fuelwood are identified each year and permits are readily available in MNR District offices.	In 2009, seven fuelwood areas were identified that were distributed across the Timiskaming Forest. The amount of area identified appears to meet the intent of the objective. In addition, the MNR has provided opportunities for the public to harvest

Objective	Targets	Assessment	Comments
			fuelwood within 30 m of either side of existing forest access roads.
Commercial Fuelwood: Explore the harvest potential of fuelwood for commercial use with TFAI shareholders, andother individuals.	No specific target identified	In the first three years of the FMP, an average of 5,200 m ³ /yr of wood of all species was harvested for commercial fuelwood, with the trend showing an increase. In 2008-09, 7,712 m ³ of fuelwood was cut.	As in the 2001 FMP, the objective is expressed in general terms but the Company seems to be meeting the intent of it, although it is currently shareholders that are participating in the commercial fuelwood market.
Burned Forest: Minimize the area unintentionally burned due to forest management activities	No specific target identified	No fires started in the course of operations were reported in the AR's for the first three years of the plan period.	There were no natural depletions and no salvage reported during the first three years of the current plan period.
Cedar and Larch: Promote the sustainable utilization of Cedar and Larch through identification and quantification by TFAI shareholders	No specific target identified	The Company has identified that the most readily available material is in by-pass and other exclusions, and so is encouraging harvest operators to map the residual so that it can be offered to potential cedar/ larch users.	There has been little uptake – unfortunately, the Company and shareholders had a bad experience with one person who seemed to be setting up a cedar operation but vanished with money borrowed for the operation. Understandably this has dampened interest in pursuing such ventures.
Integrated Resource Management: To coordinate forest management activities such that benefits to all Crown land users are maximized while conflicts resulting from forest operations are	To continue holding an annual meeting with tourist outfitters, trappers, BMA operators, etc at the time of AWS approval	To be confirmed	
	Continue playing an active role on both LCCs providing updated information on current forest	Interviews with LCC members confirmed that field trips have been organized to facilitate understanding of specific issues	Target attained

Objective	Targets	Assessment	Comments
minimized	management and policies as well as providing opportunities for field tours		
	Continue working with other users and stakeholders to ensure a balance between summer and winter forest operation opportunities exist.	Interviews with LCC members confirm that the company has been engaged with various stakeholders to address their concerns regarding different uses of the forest	Target attained
	Develop RSAs based on continually improving the communications between TFAI and licensed resource based tourist operators	Interviews with LCC members indicate that communications with LCC members including those representing resource based tourism are very good and that the company is open to address their concern.	Target attained
Social and Economic: Provide a maximum sustainable wood supply so that communities depending upon the forest industry for employment and stability continue to benefit from forest management activities on the TF.	The planning team will complete a socio-economic impact analysis for each management alternative in consultation with the LCCs and will include the results in the analysis of management alternatives	Four management alternatives were considered during the development of the 2006 FMP – the three mandatory alternative and a fourth that became the selected management alternative. The socio-economic impact analysis was undertaken using SEIM, and was supported by an analysis of the achievement of the six "socio-economic" objectives in the FMP.	The LCC participated in the development of a system to score the alternatives, and then had a set of meetings to develop consensus-based rankings of the management alternatives. Many socio-economic objectives were equally met by all mgmt alternatives; higher volumes were achieved by two of the mandatory alternatives, but there were excessive negative ecological impacts associated with these alternatives.
Cultural Heritage: Protect known Cultural Heritage values and identify and evaluate areas where high potential exists for Cultural Heritage Values with the TF.	No specific target identified	Field inspection showed good protection of cultural heritage AOCs. AOC prescriptions are appropriate. No compliance issues with these sites.	

Objective	Targets	Assessment	Comments
Aboriginal Community: Provide opportunities for local Aboriginal Communities for increased participation in the Forest Management Planning process. Improve the mutual exchange of information between the local Aboriginal Communities and local Forest Industry on such matters as values protection, forest-based employment and economic opportunities. Explore mentorship and extension services to interested local Aboriginal Communities/Entrepreneurs.	Prior to the initiation of the 2011 FMP, develop a strategy with each First Nation that identifies how local knowledge will be gathered from the Community	Work on this objective has started with the establishment of an Aboriginal Traditional Knowledge Committee. Other relevant work is the development of a First Nations Policy with the involvement of affected First Nations (First Nations Advisory Committee)	Likely to be attained
	Meet annually (at a minimum) with each local First Nation to discuss and report on matters that are of interest to the community. This meeting will be in addition to any other regularly scheduled meetings.	Communications with First Nations are very good as confirmed through interviews. The company has established among others the First Nations Advisory Committee and meets regularly with First nation representatives.	Likely to be attained
Forest Cover Objectives			
Marten Habitat: Provide suitable marten habitat on the TF.	To maintain a minimum of 162,826 ha of preferred marten habitat during each 10-year term.	This non-spatial goal is predicted to be achieved in each model interval predicted by SFMM	Target likely to be achieved
	To maintain 10-20% of the forest capable of producing marten habitat in suitable condition in core areas.	This constraint was built into SFMM modeling. Modeling predicts attainment of 9-13% suitable core over the next 40 years.	Target will be achieved, but modeling predicts it will be at the lower end of the target range.
	Arrange suitable habitat into core areas, each encompassing a minimum of 3,000 ha and comprised of at least 75% suitable habitat.	Eight of the 25 identified cores consisted of less than 3000 ha. Core area never reaches 75% suitable, ranges between 42.4% in 2006 and 60.9% in 2046.	Target is not predicted to be reached
Moose Habitat: Ensure critical moose habitat is retained or	To maintain a minimum of 105,360 ha of preferred moose	This constraint was built into SFMM modeling.	Target likely to be achieved

Objective	Targets	Assessment	Comments
enhanced where appropriate as well as ensuring that spatial representation of critical habitats across the landscape has been considered on the TF.	habitat during each ten-year term.		
Other Values: Continue to identify and mitigate management impacts on all known fish and wildlife habitat, recreational, commercial, non-timber forest resource, and other values on the TF.	No specific target identified	This objective is difficult to assess as the target is not quantitative. We infer that it implies adherence to the FMP, particularly to AOC prescriptions, NPDE guide and all other guides. To date there are no indications of significant transgressions with these guides.	Likely to be achieved, but difficult to quantify.
Species at Risk: To ensure the protection of habitat required by species at risk inhabiting the TF.	No specific target identified	Habitat protection is provided in a coarse filter by implementation of the NDPE guide and in a fine filter by use of specific AOCs.	Lack of a specific target makes assessment of this objective rather simplistic
Silviculture Objectives			
Available Crown Area: Continue minimizing productive area lost by reducing area used for slash, roads and landings.	Maintain the total harvest area lost to roads and landings less than or equal to 3%.	The audit team viewed the almost complete burning of slash piles across the forest, and did not note excessive landings or road. While a sample of measurements from different harvest blocks would be required to quantitatively assess this objective, based on the field observations of the audit team, TFAI appears to be meeting this objective.	

Objective	Targets	Assessment	Comments														
Regeneration: Regenerate harvested area to standards set in the SGRs. Investigate opportunities and economically viable alternatives to the aerial application of herbicides for the control of competing vegetation in regenerating harvest area.	Regenerate recently harvested areas [as follows] for the first five-year operating term: extensive silviculture - 21,591 ha; basic silviculture - 9,304; intensive artificial regen. (i.e. tree planting) – 8,953 ha elite (1 st generation) artificial regen- 5,576 ha.	To date in the 2006 FMP term (after two years of reported operations), the reported area of total regeneration is 22,777 ha, or 115% of the FMP forecast.	Progress towards this target is on track.														
Growth and Yield: Enhance the growth and yield and commercial value of selected forest stands on the TF.	Utilize improved seed from seed orchards	The table below shows the use of improved seed during the 2006 FMP period to date.	TFAI is making good progress for this objective. The use of improved seed has increased since the previous FMP term.														
		<table><tr><th rowspan="2">Grow Year/Plant Year</th><th colspan="2">% seedlings which were grown using improved seed from seed orchards</th></tr><tr><th>Jack Pine</th><th>Black Spruce</th></tr><tr><td>2006/2007</td><td>43</td><td>55</td></tr><tr><td>2007/2008</td><td>99</td><td>39</td></tr><tr><td>2008/2009</td><td>100</td><td>82</td></tr></table>		Grow Year/Plant Year	% seedlings which were grown using improved seed from seed orchards		Jack Pine	Black Spruce	2006/2007	43	55	2007/2008	99	39	2008/2009	100	82
		Grow Year/Plant Year			% seedlings which were grown using improved seed from seed orchards												
				Jack Pine	Black Spruce												
		2006/2007		43	55												
	2007/2008	99	39														
2008/2009	100	82															
Plant approx. 32,459,935 seedlings over the 5-year term.	To date in the 2006 FMP term (after two years of reported operations), 10,325,800 tree seedlings have been planted, which corresponds to 80% of the two-year forecast.	TFAI is making good progress for this objective.															

APPENDIX 3 – COMPLIANCE WITH CONTRACTUAL OBLIGATIONS

Licence Condition	Licence Holder Performance
Payment of Forestry Futures and Ontario Crown charges	As of March 31, 2009, the SFL holder, Timiskaming Forest Alliance Inc., owed a total of approximately \$37,000, and at the same time, a number of overlapping licensees owed a total of approximately \$68,000 in Crown dues and Forestry Futures Trust payments.
Wood supply commitments, MOAs, sharing arrangements, special conditions	There were no wood supply commitments or MOAs on the Timiskaming Forest, and no special conditions in Appendix F of the SFL.
Preparation of FMP, AWS and reports; abiding by the FMP, and all other requirements of the FMPM and CFSA	TFAI prepared a 2006 FMP, and annual work schedules and annual and other reports throughout the audit period as required.
Conduct inventories, surveys, tests and studies; provision and collection of information in accordance with FIM	<p>TFAI has an excellent program of silvicultural effectiveness monitoring in place to support its field operations. During the audit period, TFAI completed the assessment of a total area of 42,468 ha. During the 2001-2006 FMP period, TFAI assessed more than twice (208%) the planned area for free-to-grow status.</p> <p>Additional surveys are conducted to verify inventory attributes, and the entire suite of silvicultural assessments is well-integrated to ensure timely and accurate inventory update for planning purposes. Information is collected and managed according to FIM standards.</p>
Wasteful practices not to be committed	The audit team did not see any instances of wasteful practices and this has not been an issue in the compliance program during the audit period.
Natural disturbance and salvage SFL conditions must be followed	There was relatively little salvage conducted during the audit period, with 47 ha being salvaged in 2004-05 (blowdown). The CFSA and SFL requirements related to salvage harvesting were followed during the audit period.
Protection of the licence area from pest damage, participation in pest control programs	<p>In the final year of the audit period, MNR conducted aerial spraying of <i>Bacillus thuringiensis</i> (Bt) on an area of 11,368 ha in the western portion of the licence area, to control an infestation of jack pine budworm. TFAI participated in the planning and assessment of the pest control program as per their contractual obligations.</p> <p>This pest control program will be reported on in the Annual Report for the year 2008/2009. Initial assessment findings indicate that the control program appears to have been effective.</p>
Withdrawals from licence area	Not assessed – medium risk procedure.
Audit action plan and status report	The recommendations from the 2004 and 2006 IFAs are discussed below.
Payment of forest renewal charges to Forest Renewal Trust (FRT) and maintenance of minimum balance.	As of March 31, 2009, the SFL holder, Timiskaming Forest Alliance Inc., owed a total of approximately \$20,000 in Forest Renewal Trust payments, and at the same time, overlapping licensees owed an additional amount of approximately \$3,500 in Renewal Trust payments.
Forest Renewal Trust	All Forest Renewal Trust (FRT) eligible work that we assessed in the field

Licence Condition	Licence Holder Performance
eligible silviculture work	was of good quality. The Specified Procedures Assessment (SPA) conducted by KPMG, which was completed for the 2006/2007 fiscal year, did not identify any errors in the company records for that year. We reviewed all the vague items identified by the SPA and found that all items were for legitimate eligible expenses. We assessed approximately 28% of the total area of the Specified Procedures sites in the field, sampling from all the activities that were conducted (site preparation, renewal, tending, and free-to-grow surveys) and found that all the treatments were in place, were properly identified and mapped, and were of good quality. We also assessed in the field the data collected by TFAI for free-to-grow surveys, and found the information to be accurate. We reviewed the silvicultural records for the remaining four years of the audit period, and found that all the expenses incurred were eligible and appropriate. TFAI maintains well-organized records of its FRT eligible activities, including the contractor invoices, records of eligible expenses, maps and project reports.
Forest Renewal Trust forest renewal charge analysis	TFAI conducted the renewal charge analysis on an annual basis throughout the audit period. Proposed renewal rate changes were reviewed and approved by MNR District staff. The renewal rates for cedar, red and white pine, and tolerant hardwoods remained the same throughout the 5 years of the audit period. Renewal rates for spruce, jack pine, balsam fir, and larch (SPF), were reduced for the last three fiscal years of the audit period (i.e. 2006/2007 through 2008/09). Renewal rates for aspen and white birch were reduced for the last two fiscal years of the audit period (2007/2008 through 2008/09). The rate changes were intended to assist with the economic viability of the harvest contractors' businesses, in the difficult economic circumstances of the past several years. At the time that the rate reductions were implemented, there was a significant surplus of funds above the minimum balance in the Forest Renewal Trust. The renewal charge analyses, and the rate changes that were made, were appropriate given the revenues generated and the expenditures required to implement the silviculture program for the Timiskaming Forest.
Silviculture standards and assessment program	SGRs were updated between the successive FMPs (from 2001 to 2006) to reflect local knowledge and scientific advances. The complete cycle of TFAI's silvicultural monitoring, information collection and processing, from SGRs, FOPs, field operations, and regeneration assessment surveys to FRI update is very good. TFAI has met its contractual obligations in regard to the silvicultural standards and assessment program.
Aboriginal opportunities	MNR & TFAI exercised "best efforts" working with Aboriginal communities, of which there are nine that have an interest in the forest. All representatives interviewed during the course of this audit indicated satisfaction with the efforts made by the company and MNR to facilitate their involvement.
Internal compliance prevention/education program	TFAI maintains an internal compliance prevention / education element through the implementation of its compliance monitoring program. Compliance monitoring for forest operations are conducted by experienced TFAI staff.
Compliance inspections and reporting; compliance with compliance plan	The company has met its compliance inspection obligations, completing over 1,000 inspections during the audit period.
Obligations on Class X, Y, and Z lands	During the audit period, TFAI has been working towards regenerating Y and Z lands. All silvicultural obligations for Class X lands, including surveys and assessments, are implemented through the normal silvicultural program, which has been conducted to a high standard of

Licence Condition	Licence Holder Performance
	quality, and was fully in accordance with the relevant FMPs. Under the condition of the SFL, the company has no silvicultural liability for areas classified as backlog, however, it is important to address any silvicultural requirements for these areas through the normal silvicultural program as well. The original area of Class Y and Z Lands was 27,751 ha, and the area of backlog was 25,425 ha for a total of 51,176 ha. Since the last IFA for the Timiskaming Forest for the 1999-2004 period, a total of 2,882 hectares of area has been treated, leaving a net outstanding untreated area of Class Y, Z and Backlog of 1,814 hectares, of which 891 ha is in the Class Y and Z Lands. The 2006 FMP contains detailed silvicultural objectives and renewal targets designed to address the remaining silvicultural needs for these areas.

Review of Previous Audits' Recommendations

The audit team reviewed the extent to which the Company and MNR addressed the recommendations of the 2004 IFA of the Timiskaming Forest and 2006 Shining Tree IFA. The recommendations of those audits are shown in Table 2 and Table 3 respectively. All ten recommendations made in the 2004 IFA of the Timiskaming Forest have been addressed. Several of the recommendations of the 2006 IFA of the ShiningTree Forest have not been addressed. In fairness, it has only been three years since that IFA took place, and normally the extent to which recommendations have been addressed are assessed after a period of five years, during the subsequent audit. So, it is possible that some of the Recommendations may be addressed within the normal window allotted. Recommendations of the 2006 IFA which have not yet been addressed are reviewed below:

Recommendation #2: *"That by April 1st, 2007 MNR, in consultation with the Company, review the quality of the values information in the NRVIS database for the Forest, and that MNR revise the database so that it accurately reflects knowledge of existing values and ensure that the data are maintained consistent with the direction in the Forest Information Manual."* No evidence was provided that the MNR and company together reviewed the quality of values information. Although the Ministry provided evidence that updates occur as required, the Audit Team could not confirm the overall quality of the NRVIS information for the ShiningTree portion of the Forest. MNR and company staff provide very different impressions of the quality of the information, so a similar recommendation (**Recommendation # 4**) has been provided in this audit.

Recommendation #3 : *"That MNR conduct site inspections of values reported by the Company within two working-days of receiving the information if the value may be negatively affected by current forest operations."* MNR described implementation of a process to address this recommendation, however, the company provided a review of nest values submitted to the MNR Gogama as in need of change (either new nests found or revised locations) over the last 20 months (spanning Feb/08 to July/ 09). Of the nine reported in that period, only five had been changed in NRVIS as of November, 2009. Although the value may have been confirmed within the two-working day period, the fact that NRVIS updates had not been completed, suggests that the system is still not working as required.

Recommendation #4: *"That Corporate MNR provide values funding sufficient to meet the agency's responsibilities related to FMP planning requirements, and that funding*

also be provided on an annual basis sufficient to collect information for the entire year's allocations" The MNR does not make values funding available on an annual basis, despite numerous recommendations on this topic by previous IFAs. Concern was expressed that values funding associated with FMP planning may not be distributed appropriately across the Forest; the audit team believes that the MNR's professionals can deal with this circumstance.

Recommendation #6: "That the MNR provide a decision regarding complete amendment request within 15 days, as identified in the FMPM. In addition, MNR should track the amount of time necessary to accommodate incomplete amendment requests and the need to incorporate aboriginal consultation into amendment decisions."

Although this issue has not been completely resolved, as discussed in Section 4.3 of this report, sufficient progress has been made so that the audit team does not believe it is necessary to make the same, or a similar recommendation in this audit.

Recommendation #7: "That MNR complete its review of Annual Work Schedules within the 30 day period identified by the FMPM." As noted by its presence in the table below, this recommendation has been addressed by the MNR, however a related issue – of raising significant issues late in the review process and not providing capacity to assist in the resolution is raised and addressed in **Recommendation # 1** of this audit.

Recommendation #12: "That the MNR and the Company identify and address the impediments to a better working relationship." Although this issue has been discussed at MNR/company meetings, the working relationship has not improved appreciably. As described in Section 4.6 of this report, the audit team does not believe another recommendation will help and trusts the professionalism of the staff involved to continue attempting to address this.

Recommendation # 13: "That the company and MNR develop a system for accurately tracking milestone dates associated with the submission, review and approval of forest management planning documents." As described in the discussion of

Recommendation # 8 of this audit, this issue has not been resolved, and that recommendation directs Corporate MNR to address the issue.

Recommendation # 14: That the MNR increase the level of compliance monitoring on the forest. As described in Recommendation # 7 of this Audit, the level of compliance monitoring undertaken by the MNR on the Timmins portion of the forest remains very low. **Recommendation # 7** directs the MNR to conduct an appropriate level of compliance monitoring on all parts of the Forest.

Table 2. Recommendations of the 2004 Timiskaming IFA that were addressed successfully.

No.	Recommendation
1.	Corporate OMNR finalize the Condition #34 Guidelines and distribute them to local First Nations.
2.	The OMNR Kirkland Lake District Manager ensure that copies of all amendments to the FMP are distributed to the locations and within the timelines identified in the FMPM.
3.	OMNR provide clear prescriptions in the next FMP, coordinated at a regional level, based on the OMNR raptor guide, Forest Raptors and Their Nests in Central Ontario (OMNR 1998), and that TFAI continue to make training available to appropriate staff members of

No.	Recommendation
	the shareholder companies.
4.	TFAI and OMNR must work together to improve the process for field identification of intermittent and permanent streams, to improve operational efficiency
5	The planning team must ensure that there is continuing progress towards attaining old growth and marten core requirements in the next plan cycle.
6.	TFAI continue to monitor current trials and implement the most effective renewal treatment techniques across failed poplar sites. Further, given that these sites appear to have failed to regenerate due to damage caused by a prolonged forest tent caterpillar outbreak, the TFAI should pursue assistance from the Forestry Futures Trust for renewal of these sites
7.	The TFAI shall ensure that a separate RPFO Summary is produced for each RPFO prepared for the TF.
8.	TFAI must complete an MOA with the Commonwealth Plywood Co. Ltd. and arrange for delivery of its Appendix E obligations or change the commitment listed in Appendix E, in partnership with Corporate OMNR, to reflect its current wood supply practices
9.	Corporate OMNR should review the mechanism for setting salvage rates to ensure that the price is based on fair market assumptions and that a decision occurs in a timely way.
10	The Minister of Natural Resources should extend the Sustainable Forest License with the Timiskaming Forest Alliance Inc. for an additional 5-year period.

Table 3 Recommendations of the 2006 Shining Tree IFA that have been addressed successfully.

No.	Recommendation
1.	That MNR complete the Memorandum of Understanding regarding Roles and Responsibilities for the Administration of the Timiskaming Forest by April 1st, 2007
5.	That, by Sept. 1st, 2007 MNR (Timmins District) evaluate the Thermal Regime Estimation Process developed by TFAI and identify circumstances in which it could be improved.
8.	That MNR ensure that the operator's camp at Block 308 is either removed or rehabilitated and appropriately authorized
9.	That the Company take measures to ensure that operators on sensitive sites avoid site damage
10.	That TFAI conduct additional supervision of harvesting operations conducted on lowland sites during the 2006-2011 FMP period, and if necessary take steps to ensure that training of operators is adequate to ensure proper implementation of SGR requirements for natural regeneration of these areas.
11.	That the Company and MNR review existing water crossings on the Forest and identify the extent to which inadequate culvert installations exist. Should results warrant, the Company is to review its installation procedures to ensure that the means used to install culverts meets relevant standards.
15	That the MNR and the Company finalize the status of the 2004-05 annual report and if required, submit it to the Forest Information Portal.
16.	That the Company provide complete, accurate and timely annual report submissions. The company should also ensure that its responses to MNR reviews are comprehensive and timely.
18.	That TFAI conduct an analysis of its free-to-grow information, and silvicultural effectiveness monitoring information, where appropriate, for the preparation of the next FMP.

APPENDIX 4 – AUDIT PROCESS

Overview

The Crown Forest Sustainability Act (CFSA) directs the Minister of Natural Resources to conduct a review of each tenure-holder every five years to ensure that the licensee has complied with the terms and conditions of its licence. The Independent Forest Audit (IFA) contributes to this mandate, as well as complying with the direction to the Ministry laid out in the 1994 Class EA decision, subsequently confirmed in the 2003 Declaration Order⁴. Regulation 160/04 under the CFSA prescribes the minimum qualifications required by the audit team and sets out direction related to the timing and conduct of IFA's, the audit process and reporting. A more detailed description of the scope and process of an IFA is set out in the Independent Forest Audit Process and Protocol (IFAPP), which contains approximately 150 individual audit procedures.

The IFAPP, reviewed and updated annually by the MNR, states that the purpose of the audits is to:

- "assess to what extent forest management planning activities comply with the Forest Management Planning Manual and the [Crown Forest Sustainability] Act;
- assess to what extent forest management planning activities comply with the Act and with the forest management plans, the manuals approved under the Act, and the applicable guides;
- assess the effectiveness of forest management activities in meeting the forest management objectives set out in the forest management plan, as measured in relation to the criteria established for the audit;
- compare the forest management activities carried out with those that were planned;
- assess the effectiveness of any action plans implemented to remedy shortcomings revealed by a previous audit; and
- review and assess a licensee's compliance with the terms and conditions of the forest resources licence."

In 2009, MNR introduced a streamlined reporting procedure, which has been followed for this report. The body of the audit report provides a succinct discussion of the audit process and results, with more detail on key aspects contained in the appendices. There are two key types of audit findings – recommendations and best practices. A recommendation is explicitly defined in the IFAPP as follows:

Recommendation - sets out "a high level directional approach to addressing [a] non-conformance. In most cases, recommendations follow from the observation of material non-conformances. In some instances, however, auditors may develop recommendations to address situations where they perceive a critical lack of effectiveness in forest management activities, even though no non-conformance with law or policy has been observed."

⁴ Declaration Order regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario, approved by Order in Council 1389/03 on June 25, 2003.

Recommendations can be directed towards the Company and/or at the appropriate administrative level of the Ministry of Natural Resources (District, Region or Corporate). Auditees must address all recommendations in follow-up actions.

If the Audit Team feels that an aspect of forest management is exceptional it may be identified as a best practice. The IFAPP states that "Highly effective novel approaches to various aspects of forest management may represent best practices. Similarly, applications of established management approaches which achieve remarkable success may represent best practices." In contrast, "situations in which forest management is simply meeting a good forest management standard" do not qualify.

Audit Procedures and Sampling

The IFAPP describes each of the components of the audit process and contains the audit protocol, which constitutes the main framework for the audit. The procedures, which are the basis for assessing the auditees' compliance and effectiveness, are organized according to eight principles. A positive assessment of the procedures under each principle results in the principle being achieved. A negative assessment of a procedure typically leads to a recommendation.

IFAPP segregates the procedures into three classes based on the risk to forest sustainability should the management aspect covered by the procedure not be achieved:

- "low risk" - strictly administrative in nature;
- "moderate risk" - have an administrative component but also a bearing on sustainability; and
- "high risk" – related to sustainable forest management.

For each principle, the audit team is required to sample 20 – 30% of the procedures identified as low risk and between 50 – 75% of the procedures considered to be moderate risk and all the procedures identified as high risk. This risk-based approach is intended to reduce the auditor and auditee workload and focus the audit on more significant issues. The table below identifies, for each principle, the number of procedures in each risk class, the number audited, and the proportion that are audited. Note that because the Timiskaming Forest has not been certified to a third-party certification standard, none of the IFA exclusions pertaining to certified forests are applicable.

Procedures Audited, by Risk Category								
Principle	Low Risk			Medium Risk			High Risk	Comments
	Applicable (#)	Selected (#)	% Audited	Applicable (#)	Selected (#)	% Audited	Audited (#) (100% Audited)	
1. Commitment	0	N/A	N/A	2	1	50	0	The requirement to demonstrate commitment was not audited, since our initial meetings and assessment suggested that both auditees are committed to practicing good forest management.
2. Public Consultation and Aboriginal Involvement	0	N/A	N/A	6	5	83	2	We opted to audit a higher percentage of medium procedures than required since we think these are important aspects. We opted not to assess whether public notices of inspections were issued, since MNR usually ensures that this is done properly.
3. Forest Management Planning	6	2	33	12	10	83	38	Low risk procedures regarding the content of the plan introduction, SEV briefing note, index to EA components of the FMP, and the plan's contributor page were not assessed since these are examined during plan review. Medium risk procedures related to documentation of the certification and approval of the FMP, and the plan description of the unit's physical features were also omitted for the same reason.
4. Plan Assessment & Implementation	1	1	100	1	1	100	9	All procedures under this principle were audited.
5. System Support	0	N/A	N/A	1	1	100	1	All procedures under this principle were audited.
6. Monitoring	0	N/A	N/A	7	7	100	11	All procedures under this principle were audited.
7. Achievement of Objectives and Forest Sustainability	0	N/A	N/A	2	0	0	15	Two medium risk procedures that only applied to the RPFO were not audited, since the Year Ten AR is available.
8. Contractual Obligations	0	N/A	N/A	4	4	100	8	Eleven procedures in this principle have not been rated with regard to risk, and we have all of them. All procedures in this Principle were audited
Totals	7	3	42	35	31	89	84	

The audit commenced with the preparation of a detailed audit plan⁵, which described the procedures to be used during the audit and assigned responsibilities to members of the Audit Team. A pre-audit meeting was held between representatives of the Audit Team, TFAI, MNR, and the Local Citizens' Committee (LCC). The primary purposes of the meeting were to familiarize the auditees with the audit process, review the Audit Plan, and to select the sites to be inspected in the field during the audit.

The focus of the audit was an intensive six-day site visit, which included document review, interviews and inspections of a variety of sites throughout the Forest where activities had been undertaken during the audit period. The sites were selected by the Audit Team at a one-half day meeting following the pre-audit meeting, with some minor adjustments afterwards to ensure a balanced sample.

Sampling and Sample Intensity

The IFAPP required the Audit Team to sample at least 10% of the area treated during the audit period for each major activity, such as harvesting, site preparation, and regeneration. Activities that carried higher risk or that were only undertaken on relatively small areas were to be sampled more intensively. The audit exceeded the minimum sample size specified in the IFAPP, with the overall level of sampling ranging between 10.0% to 30% for key activities.

Examples of operations were examined in each major forest unit present on the Forest, representing a range of harvesting systems, year of harvest, and silvicultural treatment packages. A number of sites where renewal activities had been conducted during the audit period were visited to evaluate the appropriateness and quality of these treatments and to perform an initial evaluation of their effectiveness. These included sites that were site prepared, seeded, planted, and tended, and those for which natural regeneration treatments were prescribed.

The auditors were required to verify in the field at least 10% of the areas reviewed in specified procedures undertaken by KPMG for the 2006-07 fiscal year. We verified in the field 27.6% of the eligible silvicultural activities undertaken by TFAI in the year 2006/07.

The table below shows the total amount of each key activity that took place during the audit period, and the sample size and sampling intensity in the IFA. In the table, the total in the audit period refers to the areas that were harvested, site prepared, and renewed during the audit period. The next column to the right shows the total area of the treatments viewed during this audit. The sampling intensity is calculated by dividing the area of treatments viewed by the total area (or other relevant measurement statistic) during the five-year period.

⁵ ArborVitae Environmental Services Ltd. Timiskaming Forest Independent Forest Audit Plan, Aug. 7, 2009.

Table 4. Sampling intensity of the field operations, by key feature investigated.

Feature	Total in Audit Period *	Total Sampled	Sample Intensity %
Harvest (ha)	38,296	4,462	11.7%
Site Preparation (ha)	17,460	3,064	17.5%
Natural Regeneration (ha)	20,298	2,079	10.2%
Planting (ha)	13,895	2,185	15.7%
Seeding	5,095	721	14.2%
Tending (ha)	15,919	1,595	10.0%
Free-to-Grow Assess (ha)	47,619	5,420	11.4%
2006 FRT Areas (ha)	18,395	5,060	27.6%
Areas of Concern (no.) **	34	21	61.8%
Water Crossings***	approx 100	30	30.0%
Primary and Branch Roads (km)****	38.6	28.0	72.5%

* Numbers are approximate as the final annual report for FY2007/2008 was not yet due at the time the draft report was completed. Estimated values for 2007/08 are included in the table.

** Number shown is different types of AOCs.

*** Includes aerial reconnaissance.

****Funded at least in part through the Road Construction and Maintenance Agreement with the MNR.

The table is intended to portray an approximate level of effort only. There are several factors which preclude too-precise an interpretation of the figures presented in the table. Although we viewed many individual harvest and/or treatment blocks during the field inspection portion of the audit, more than one aspect of forest management was inspected at some sites. For example, at sites where harvesting had taken place, harvest practices, compliance issues, road construction, Area of Concern (AOC) protection, site preparation, and regeneration activities may all have been inspected. Finally, of the area figures shown above, it should be noted that we did not inspect every hectare of the blocks we visited – such a level of effort would be infeasible.

Summary of Consultation and Input to Audit.

The IFAPP also requires the audit team to seek public input into the audit. A sample of 385 individuals and groups, taken from the Ministry's mailing lists for Gogama and Kirkland Lake, was invited by mail (sent Aug 4, 2009) to provide input into the audit. Notices requesting comment were placed in four regional newspapers in mid-September. LCC members were encouraged to solicit comments from the interest groups that they represent and communicate this to the audit team.

In response to these efforts, the audit team received twelve replies via mail. Of the written responses, most felt that the forest was being managed sustainably, although several concerns were raised. In approximate order of the frequency with which they expressed, concerns included:

- the use of clearcutting as a harvesting/management technique;
- impacts of clearcutting and herbicide application on wildlife, specifically moose and furbearers;

- management of slash and accumulation of waste wood; and
- impacts of forest management on roads.

In addition, two written responses drew attention to specific locations of concern to the respondent. The audit team visited the locations during the site visit portion of the audit. All of the concerns expressed by the respondents were considered by the audit team.

We also met with and/or had discussions with all staff of TFAI, and many MNR staff from the Kirkland Lake and Timmins Districts, including the District Managers, Foresters and Biologists. Discussions with professional staff covered the gamut of topics considered in this audit. Discussions were frank and all staff responded professionally to requests for information.

In terms of the Aboriginal consultation, local Aboriginal communities opted for a separate consultation process, that led to the formation of the First Nations Advisory Committee. The audit team contacted all local Aboriginal communities and arranged meetings with:

- Mattagami First Nation
- Beaverhouse Aboriginal Community
- Matachewan First Nation
- Temagami First Nation

Through individual and group meetings, the audit team engaged eight members of these communities in discussions. All representatives interviewed were satisfied with their involvement in the planning process and their relationship with MNR and the company. While concerns over specific issues such as harvest blocks, allocation of harvesting contracts, spraying, traplines, exist, they all felt that there were good opportunities to meet and communicate with the company and MNR to address them.

Members of the audit team met with ten members of the Gogama and Kirkland Lake LCCs. The general feedback from LCC members was very positive regarding the level of support and the effort that both MNR and the company have made in informing them of the issues and in addressing concerns raised. Field trips were organized and experts brought in to discuss issues. In terms of main concerns raised, some commented that there is too much focus on fibre and that forests are more than that, as well there was some concern over the excessive use of technical language. Some issues like roads and access are usually contentious issues that LCC members have different views on.

APPENDIX 5 – LIST OF ACRONYMS

AOC	Area of Concern
AHA	Available Harvest Area
AR	Annual Report
AWS	Annual Work Schedule
BMP	Best Management Practice
B.Sc.F	Bachelor of Science in Forestry
Bt	Bacillus thuringensis
CFSA	Crown Forest Sustainability Act
Class EA	Class Environmental Assessment for Timber Management on
Crown Lands	in Ontario
DM	(MNR) District Manager
FIM	Forest Information Manual
FMP	Forest Management Plan
FMPM	Forest Management Planning Manual
FMU	Forest Management Unit
FOP	Forest Operations Prescription
FOR	Forest Operations Report
FRI	Forest Resource Inventory
FRT	Forest Renewal Trust
FTG	Free-to-Grow
FU	Forest Unit
TFAI	Timiskaming Forest Alliance Inc.
ha	hectares
km	kilometres
IFA	Independent Forest Audit
IFAPP	Independent Forest Audit Process and Protocol
IRM	Integrated Resource Management
LCC	Local Citizens Committee
m ³	cubic meters
MNR	Ontario Ministry of Natural Resources
MOA	Memorandum of Agreement
NDPEG	Natural Disturbance Pattern Emulation Guide
NRVIS	Natural Resource Values Information System
NSR	Not Satisfactorily Regenerated
OH	Other Hardwood Forest Unit
OLL	Ontario's Living Legacy
RPF	Registered Professional Forester
RPFO	Report of Past Forest Operations
PWR_H	Red and White Pine High, Forest Unit
PWR_L	Red and White Pine High, Forest Unit
RSA	Resource Stewardship Agreement
SFL	Sustainable Forest Licence
SFMM	Strategic Forest Management Model
SGR	Silvicultural Ground Rules
SPA	Specified Procedures Assessment
SPF	Spruce Pine Fir

APPENDIX 6 – AUDIT TEAM MEMBERS AND QUALIFICATIONS

Auditor	Role	Responsibilities	Credentials
Mr. Chris Wedeles ArborVitae Environ. Services Ltd.	Lead Auditor, Wildlife and Roads Auditor	<ul style="list-style-type: none"> review and inspect Areas of Concern Documentation and Practices; review and inspect aspects of forest management related to environmental practices and wildlife management integration; review and inspect access and water crossings 	B.Sc., M.Sc. (Wildlife Biology); 21 years wildlife and forest ecology and experience in Ontario; completed almost 31 previous independent forest audits; certified as an auditor by the Quality Management Institute.
Dr. Jeremy Williams, RPF ArborVitae Environmental Services Ltd.	Lead Auditor, Harvest and Wood Supply Auditor	<ul style="list-style-type: none"> overall audit coordination; oversee activities of other team members; liaise with Company & MNR; review and inspect harvesting records and practices; review aspects of forest management related to forest economics and social impacts; reviews FMP modeling inputs and activities 	B.Sc.F., Ph.D. (Forest Economics); 20 years consulting experience in Ontario related to forest management, planning, wood supply modeling, and forest economics; participated in 19 previous IFA assignments; certified as an auditor by the Quality Management Institute.
Mr. Robert Arnup	Silvicultural Auditor	<ul style="list-style-type: none"> review and inspect silvicultural practices and related documentation; review and inspects selected environmental aspects of forest management 	M.Sc. Senior forest ecologist with 25 years' experience in silviculture, ecosystem-based forest management applications and environmental consulting in boreal Canada and elsewhere
Mr. Mark Fleming, RPF Fleming Forestry Consultants	Planning Auditor	<ul style="list-style-type: none"> review FMP and related documents to ensure compliance with FMPM and other regulations; review plan development process for conformity with FMPM 	Hon. B.Sc.F., R.P.F. 20 years experience in forest management in Ontario as a consultant, working as a regional MNR planning specialist, and operations forester with industry; Trained lead auditor for ISO 14001 and Smartwood/FSC .
Mr. Marcelo Levy, Responsible Forestry Solutions	Consultation Auditor	<ul style="list-style-type: none"> Review documentation related to forest management consultation Interview stakeholders, LCC, and First Nations regarding forest management issues 	B.Sc. (forest engineer) and M.Sc. in Environmental Studies. Directed the FSC Canada Standards Program until 2005, when he formed the current Company.

APPENDIX 7 - TREND ANALYSIS

The Comparison and Trend Analysis Report contained in this Appendix was produced by TFAI. Although the Report was reviewed by the Audit Team, the Audit Team had no role in writing it.

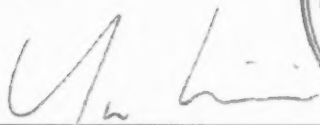
2004 - 2009 INDEPENDENT FOREST AUDIT

FOR THE

TIMISKAMING FOREST

**Comparison and Trend Analysis of
Planned vs. Actual Forest Operations Report**

Prepared by:



Yves Vivier, R.P.F.
Planning Forester
Timiskaming Forest Alliance Inc.



Date: February 1st, 2010

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1.0 INTRODUCTION

As detailed in Section 1.2 of the 2008 Independent Forest Audit Process and Protocol, the purpose of the independent forest audit is to assess:

- to what extent forest management planning activities comply with the Forest Management Planning Manual and the Act;
- assess to what extent forest management activities comply with the Act and with the forest management plans, the manuals approved under the Act and the applicable guides;
- assess the effectiveness of forest management activities in meeting the forest management objectives set out in the forest management plan, as measured in relation to the criteria established for the audit;
- compare the forest management activities carried out with those that were planned;
- assess the effectiveness of any action plans implemented to remedy shortcomings revealed by previous audit, and
- review and assess a licensee's compliance with the terms and conditions of the forest resources licence.

The *Comparison and Trend Analysis of Planned vs. Actual Forest Operations Report* for the Timiskaming Forest has been prepared for the 2009 Independent Forest Audit as per the requirements of the 2008 Independent Forest Audit Process and Protocol (OMNR, Feb. 2008). This report documents the forest management activities on the forest for the audit period starting April 1st, 2004 to March 31st, 2009 as well as for a defined period that precedes the audit period.

The history of forest management tenure for the Timiskaming Forest is complex in relation to other Sustainable Forest License (SFL) areas of comparable size. During the time of this trend analysis period, the management and subsequent amalgamation of four separate Crown management units (with separate forest/timber management planning periods) and 5 years later another amalgamation with an existing SFL was undertaken. In concert with the amalgamations was the transfer of management responsibilities from the Crown and the SFL to Timiskaming Forest Alliance Incorporated (TFAI). The direction in the protocol for the completion of the trend analysis is to use the previous two planning periods in addition to the current period as the basis of the analysis. The protocol assumes that the management unit has not undergone any significant changes to the landbase and that there were two completed five-year forest/timber management planning periods preceding the current period. Both of these assumptions do not apply to the Timiskaming Forest. First, the planned amalgamation of the four previous Crown management units lead to a series of truncated plans (Plonski 1993-1997, Timiskaming/Plonski 1997-2001 and Watabeag 1999-2001). Originally, the 1996-2001 FMP for the Elk Lake CMU was to be the only plan to complete the full five years however, with the outcome of a judicial review of a number of 1996 plans, including the Elk Lake FMP, this plan was ended on March 31st, 1999 and a new two-year contingency plan was written in order to bridge forest management activities to the amalgamated April 1st, 2001 date. Second, the ShiningTree Forest did not undergo any interruption in planning cycles, with the 1991



to 1996 and 1996 to 2001 planning periods all carried through to completion. Finally, the final amalgamation of the ShiningTree Forest was completed concurrent with the development and approval of the 2006 to 2011 Timiskaming Forest management plan.

In consideration of the complex history of the Timiskaming Forest and for the purpose of maintaining continuity between trend analysis reports (building on the 2004 Timiskaming Forest Trend Analysis) and in consultation with MNR, the decision to identify the FMP periods required for this analysis was made and is shown in Table A. Since all Crown plans were shortened to less than five-years in the recent past, identifying only the previous two planning periods would have lead to an analysis with nominal trends. Had the previous two 5-year terms previous to the current FMP been chosen (i.e. 1991 and 1996) then this trend analysis period would have been out of synchronization with past plans and resulting RPFO's. Therefore, in order to more clearly identify trends over time and provide a complete picture of the five units amalgamated into one, a total of five periods were identified. Adding the additional periods assured that notable trend results for the amalgamated management unit could be described. However, it does not address the issue related to comparing five past management units with varying planning periods to the amalgamated forest. For example, when describing the total area under management from Periods 1 through 3, it may be misleading to the reader since these Periods have five different timber/forest management planning periods, three of which were less than five years.

All Period 1 and Period 2 plans were produced using the Timber Management Planning Manual (TMPM) with the exception of the 1996 to 2001 ShiningTree plan. Plans identified in Period 3 through Period 5 including the 1999 Elk Lake and Watabeag plans as well as the 1996 ShiningTree plans were produced using the Forest Management Planning Manual (FMPM). However the 1997 Timiskaming/Plonski Plan was produced using the TMPM. For the production of the 1997-2001 Timiskaming/Plonski TMP the two units were amalgamated into the Timiskaming management unit however the reality is that since both original forests were managed as separate working circles with separate AHA calculations, TMP targets and tables, both units have been managed separately. Separate Annual Work Schedules, Annual Reports and RPFO's were prepared therefore this trend analysis considers them as separately as well. Since 1986, the independent forest audit periods coincided with the forest management plan (FMP) planning horizons of the STF. However, this was recognized during the development of the 2001-2006 Trend Analysis for the ShiningTree Forest and documented accordingly as being the last audit coinciding with the planning period before this anticipated audit. Table B is intended as a summary and reference to the information discussed above.



Table A. Reference matrix of management unit and correspond periods.

Management Unit	Period 1	Period 2	Period 3	Period 4	Period 5
Elk Lake	1991-1996	1996-1999	1999-2001		
Watabeag	1989-1994	1994-1999	1999-2001		
Timiskaming	1989-1992	1992-1997	1997-2001		
Plonski	1988-1993	1993-1997	1997-2001		
ShiningTree Forest	1991-1996	*1996-2001	*1996-2001	2001-2006	
Timiskaming Forest (01-06)				2001-2006	
Timiskaming Forest (06-11)					06-current
FMP Benchmark Date	1991	1996	1999	2001	2006

*Information used in analysis covers both Period 2 and 3 combined.

For those tables, where the use of the term “Period” may be misleading, the term “FMP Benchmark Date” was substituted with an associated date. For example, for Period 1, the benchmark date is 1991 and the data used to populate this column refers to management plans that were being implemented on April 1st of that year.

Table B. Summary of historical developments for all TMP's or FMP's by period.

Management Unit	Period	TMP or FMP	Year of FRI	FMP Prepared	FMP Implemented	Source of Information
Elk Lake	Period 1	TMP	1986	OMNR	OMNR	RPFO, AR
	Period 2	TMP	1986	OMNR	OMNR/TFAI	RPFO, AR
	Period 3	FMP	1986	OMNR	TFAI	RPFO, AR
Watabeag	Period 1	TMP	1979	OMNR	OMNR	RPFO, AR
	Period 2	TMP	1979	OMNR	OMNR/TFAI	RPFO, AR
	Period 3	FMP	1995	TFAI	TFAI	RPFO, AR
Timiskaming	Period 1	TMP	1987	OMNR	OMNR	RPFO, AR
	Period 2	TMP	1987	OMNR	OMNR	RPFO, AR
	Period 3	TMP	1987	OMNR	TFAI	RPFO, AR
Plonski	Period 1	TMP	1987	OMNR	OMNR	RPFO, AR
	Period 2	TMP	1987	OMNR	OMNR	RPFO, AR
	Period 3	TMP	1987	OMNR	TFAI	RPFO, AR
ShiningTree Forest	Period 1	TMP	1972	OMNR	OMNR	RPFO
	Period 2	TMP	1986	OMNR	OMNR	RPFO
	Period 3	FMP	1986	OMNR	OMNR/STFI	RPFO
	Period 4	FMP	1986	STFI	STFI/TFAI	RPFO, AR
Timiskaming Forest (01-06)	Period 4	FMP	1986	TFAI	TFAI	RPFO, AR
Timiskaming Forest (06-11)	Period 5	FMP	1986	TFAI	TFAI	RPFO, AR



2.0 SUMMARY OF TOTAL AREA UNDER MANAGEMENT

Table 1a through to 1e shown in Appendix I summarizes the total area under management for the Elk Lake, Watabeag, Timiskaming, Plonski and ShiningTree Forest management units respectively. The source data for these tables are TMP tables 4.8.2 and table FMP 1 and 2 for the respective management unit. For each of these tables, the current period represents the values for the existing amalgamated Timiskaming Forest and was included to reference how the original forest contributed area to the Period 5 amalgamated forest (Timiskaming Forest 2006-current). As can be seen, the total production forest for the five management units remained relatively stable during the first three periods. The notable exception is the Watabeag management unit. As referenced in the RPFO and noted in Section 2.2.2.3 of the 1999-2001 Watabeag FMP, a new forest resources inventory (FRI) was produced for the Watabeag management unit in 1995. The result of this new FRI interpretation was an increase in the spruce working group, primarily as a result of the reinterpretation of previous non-productive (i.e. treed muskeg) into production forest as well as protection forest. The changes in total area under management can also be accounted by considering the change from non-GIS based information to digital inventory data where previous linear features such as roads and streams were buffered and areas assigned to them. As well, GIS based inventory systems are far more precise than previous inventory methods thereby eliminating the past trend to round areas to the nearest hectare. Finally, unregulated Ontario Living Legacy area's (now regulated), unknown digital Provincial Park boundaries and changes in land classifications such as patent land are also sources of changes contributing to total forested land differences between Periods. As referenced in section 2.2 of the 2001-2021 STF FMP, large portions of information such as the La Motte Lake Provincial Park and some patent land were missing from the FRI description. An exact boundary for La Motte Lake Provincial Park was not available during FMP development and had not been hard coded in the FRI. However, the FMP does state that an unofficial boundary was available and that area was manually incorporated into all summaries and analysis for the development of this FMP including the Strategic Forest Management Model (SFMM). These issues were recognized during the development of the 2006-2026 Timiskaming FMP and any updates required to the FRI have been addressed and included in the amalgamated planning inventory.

Table 1f summarizes the total area under management by combining the five forests for the purposes of comparison with the amalgamated Timiskaming Forest. As described above, the benchmark dates refer to the source FMP's that were in place as of April 1st of the benchmark year. There are a number of trends that can be drawn from this table that warrant discussion.

2.1 Barren and Scattered / Non-Sufficiently Regenerated Area

For the 1999 FMP Benchmark year there was 86,484 ha of Barren and Scattered and Non-Sufficiently Regenerated (NSR) backlog area. At the time that the Crown issued the SFL to TFAI, there were identified issues surrounding the status of this area since very little survey work had been completed, and area that had been surveyed had not been updated in the FRI. The X,Y,Z land that had been identified as requiring potential silvicultural treatment was also suspect since field verification of the information was showing inconsistent results (i.e. area identified as X,Y,Z was,



in fact, unharvested or classified incorrectly). With the amalgamated 2001 FMP planning process scheduled to start in 1999, the TFAI decided to complete an aerial survey of all X,Y,Z lands and backlog area in 1998 in order to ascertain the status of these sites. This survey was not carried out as an FMP or management unit project. It was completed as a Forest Resources Inventory update exercise. Refer to Section 7.0 and 8.0 as well as Table 7 of this report for the summary results of the 1998 survey. In total, 50,251 ha of Backlog and/or X,Y,Z land was surveyed with a total of 32,310 ha (64.3%) declared as free to grow. With the unexpected success of the survey results, and based on observations from the 1998 survey, a second survey of 46,888 ha of primarily Barren and Scattered land was scheduled for 1999. Figure 1 shows a tabular and graphical summary of the results of the 1998 and 1999 surveys. A total of 97,139 ha of Barren and Scattered, Backlog and X Y and Z land were surveyed with a total of 62,674 ha (64.5%) assessed as FTG. The two-year survey exercise allowed the FRI to be confidently updated prior to the initiation of the 2001 amalgamated Timiskaming FMP and provided the clarity required for the TFAI to begin meeting the X,Y,Z license obligations. A complete discussion on the status of X,Y,Z, lands for the Period 3 and Period 4 for the Timiskaming Forest and the ShiningTree Forest can be found in Section 8.0 of this report.



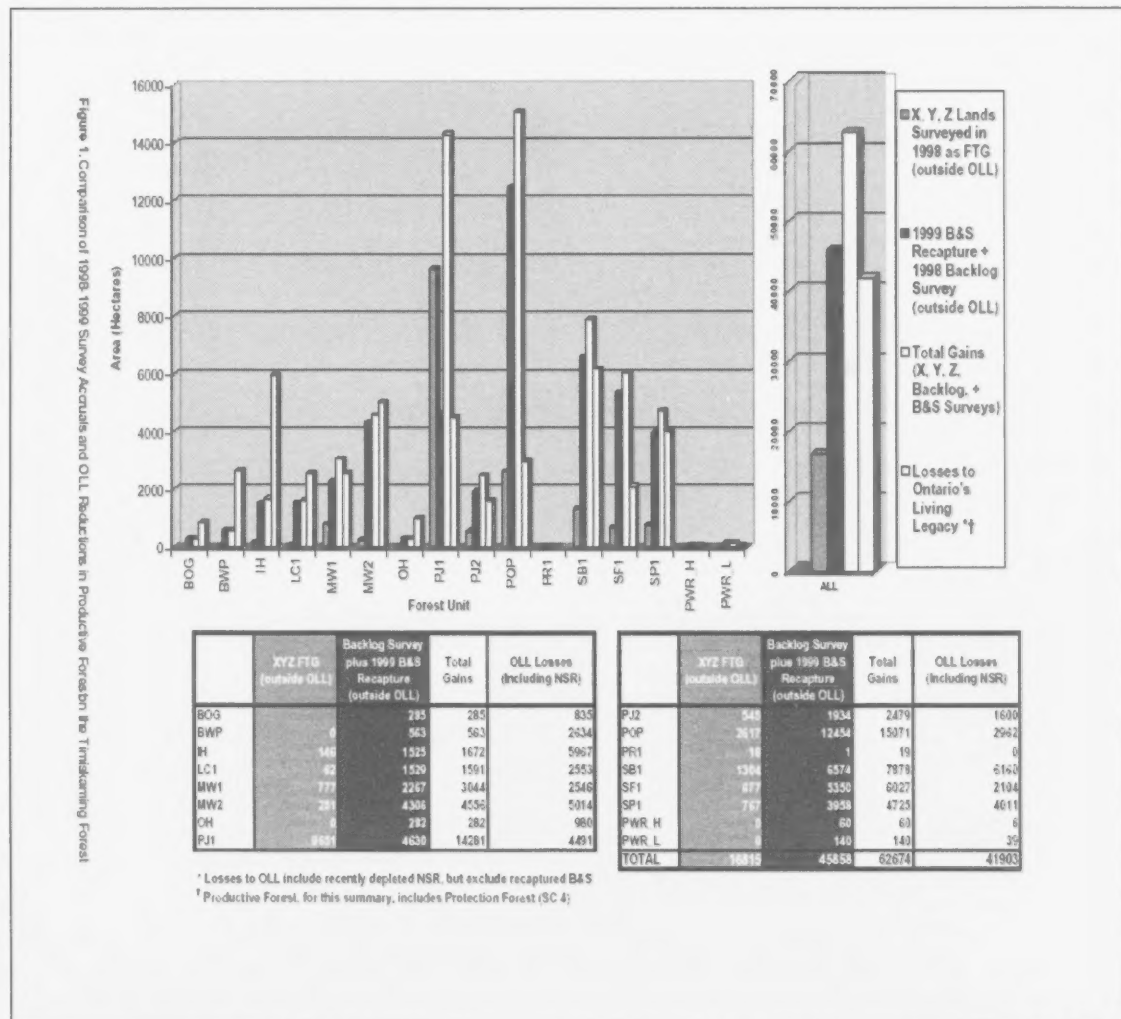


Figure 1. Comparison of 1998 and 1999 survey accruals and OLL reductions in productive forest on the Timiskaming Forest (Period 4).

2.2 Backlog

Under the terms of the Sustainable Forest License, TFAI has no obligation to regenerate backlog area. An original total of 21,090 ha of backlog area was identified on the 2001 amalgamated Timiskaming Forest landbase for survey in 1998. During the 1998 and 1999 surveys, a total of 15,363 ha was classified as FTG leaving 5,727 ha remaining. As of April 1st, 2001 an additional 219 ha was surveyed as FTG leaving 5,508 ha. From April 1st, 2001 to March 31st, 2003 an additional 3,179 hectares of backlog area was surveyed as FTG leaving 2,329 ha of area assessed as requiring treatment. Of this area, 243 ha is located within Ontario Living Legacy park area therefore 2,086 ha remains for possible future treatment. As of 2004, silvicultural treatment has

begun on 1,037 ha of this area leaving a net outstanding untreated area of 1,049 ha. A similar exercise took place on the ShiningTree Forest, however details of this information were limited. Section 8.0 of this report further details the Company's efforts to regenerate backlog area and describes in detail the net outstanding untreated area for the amalgamated forest.

In an attempt to initiate regeneration of the backlog area on the Timiskaming Forest (Period 4), TFAI applied for, and received \$1,257,662 in funding from the Forestry Futures Trust Fund for the regeneration of backlog area. Combined with a projected \$178,750 in TFAI Forest Renewal Trust funding, the three-year project was initiated in 2003 to regenerate 1,221 ha of Backlog/Barren and Scattered area.

2.3 Individual Working Group Trends

Table 1f shows trends for each working group identified over the periods of this trend analysis. Overall, there are no significant fluctuations in area (all less than 5%) in any of the working groups. However, there are a few trends worth noting. Since Period 1, a definite trend in the increase in spruce working group area has been occurring. Although there have been concerns at the provincial level that the spruce working group is in decline, the spruce working group shows an increase on the Timiskaming Forest up to Period 4 and tapering off in Period 5. This increasing trend in spruce forest area, while partially due to accrual of area as a result of silviculture, has also been attributed to the reinterpretation of the FRI. Previous balsam fir working group that was infested with spruce budworm was subsequently reclassified as spruce stands. In addition, the reinterpretation of the Watabeag FRI in 1995 led to the reinterpretation of previous non-productive sites into spruce working group stands. Another working group with notable change is jack pine. The increase is due to recent accruals related to large areas such as the Watabeag fire and regeneration treatments following depletions intended to mimic natural disturbance emulation where the predominant regenerating working group would have been jack pine. Finally, the balsam fir working group appears to have steadily increased since 1999. Concerns have been raised provincially on the reported increases in balsam fir working group. Although increases reported in this trend analysis are marginal, the 2011 FMP has had modifications made to the silvicultural ground rules in order to ensure forest management activities discourage the reestablishment of balsam fir, especially given the history of spruce budworm infestation in the area in the late 1970's.

2.4 Ontario Living Legacy

Table 1f shows a net decrease in the total forested land under management, particularly from between Period 1999 and 2001. The major cause in this reduction is due to Ontario Living Legacy (OLL) sites that were removed from the managed landbase. This area was removed from the landbase for the production of the 2001 FMP's. Figure 1 shows the net effect of the withdrawal of OLL area in relation to the accrual of Barren and Scattered/Backlog area into the 2001 FMP landbase for the Timiskaming Forest (Period 4).



3.0 DESCRIPTION OF FOREST UNITS

There has been a considerable evolution of forest units over the trend analysis period. Different foresters managed each of the original four management units over varying planning periods and as a result, most of the FMP's put in place during the period had different forest units developed as the basis for forest management. The overall trend shows forest units in the late 1980's and early-mid 1990's based entirely on FRI working group codes. Some grouping of species (i.e. Cedar, Larch and Balsam fir into Other Conifer) occurred however the management intention for these groupings was determined by the amount of area in these working groups and not on expected yield or silvicultural response. In this era, the focus on timber management and the provision of forest products allowed these aggregations. A change in forest management direction was formalized with the passing of the CFSA and the focus of management in Ontario shifted from one based primarily on the provision of timber products to an ecosystem based approach that considers other forest values and non-timber resources such as wildlife habitat, old growth and forest diversity. Subsequent plans began to utilize the FRI to aggregate stands into forest units based on both cover type and silvicultural response. The intent was to aggregate the FRI into forest units that more closely resembled the regional Forest Ecosystem Classification (FEC) types that had been developed. The first management plan to attempt this was the 1996 Elk Lake plan. The landbase was aggregated to Site Type Complexes (STC's) however; more traditional forest units were also calculated and formed the basis for all forest management. The STC's were not fully implemented since they were entirely FEC-based and no FEC inventory existed on the management unit. As well, at the time, growth and yield data as well as natural and post-harvest successional data was not available by STC (FEC Type) for use in a management plan. By 1997 initial attempts at aggregating forest stands into forest units based on cover type was implemented for the Timiskaming/Plonski TMP. For both 1999 and 2001 FMP's more refined and highly differentiated forest units were developed and implemented. Concurrent to these changes was the availability of growth and yield information, successional pathway information and links to regional habitat units that supported forest modeling efforts. These forest units were based on the Northeast Standard Forest Units with the intent to capture unique conditions on the ground incorporating forest cover, substrate and other ecological processes. Some management units have modified the standard forest units to capture the local variability in forest cover and/or address management objectives.

The adaptation of forest units from a standardized working group to those based on forest types has led to a number of issues. Forest units are very dissimilar and have led to challenges in tracking forest management changes over time. For example, the current MW2 forest unit in the 2001 forest management plan captures stands formerly aggregated in the Spruce (white and black), Poplar, White Birch, Balsam Fir, Other Conifer and Other Hardwood working groups and in some cases white and red pine. Recently, a trend towards regionally supported standardized forest units and provincial forest types with a more direct association to regional Habitat Units has resulted in easier comparisons across a sub-regional and regional area and allows for more effective "rolling up" of forest management data from the unit level to regional and provincial levels. It is certain that this ongoing adjustment of forest descriptors will continue well into the future given the continuous pursuit to improve our ability to aggregate data without compromising its usefulness for analysis.



However, the source data will continue to be the limiting factor in achieving meaningful data aggregation

In the development of the 2006 Timiskaming Forest management plan and subsequently the 2011 Timiskaming FMP, previous forest units from both management units were reviewed with the planning team and regional analyst. These were compared with the Northeast Standard Forest Units, grouped based on historical characteristics, documented and accompanied by rationale. A matrix was developed and included in the 2006 FMP as a record of the historical changes to the amalgamation of these two forests. The 2011 Timiskaming FMP, currently under development, has build on this historical information to continue tracking the evolution of forest unit movement. This matrix can be referenced in Appendix 11-1 of the 2006-2026 Timiskaming FMP and serves as the starting point and future understanding of past management decisions as well as to be used for reference in the completion of subsequent trend analysis. Table 2a to 2f shown in Appendix II describes all forest descriptors for each management unit through time for each Period.

4.0 SUMMARY OF PLANNED AND ACTUAL HARVEST VOLUMES

Table 3 shown in Appendix III is a Summary of Planned and Actual Harvest Volumes for the former management units as well as for up to the current Timiskaming FMP (Period 5). All volumes have been annualized for the indicated period.

A trend of continually lower planned volumes can be observed for the first three periods for four of the five units, the exception being the ShiningTree Forest where the planned volumes increased for all Periods, up to Period 4. A closer look at the FMP Benchmark Dates suggests that in 2001, with the inclusion of the ShiningTree Forest management unit, an increase of 8.9% in overall planned volume was obtained over the previous FMP Benchmark Date (1999). With the amalgamation in 2006, an increase of 7.5% in planned volume was also accrued over the 2001 FMP Benchmark Date. The planned volumes for the 2001 FMP's and the 2006 FMP are respectively 20% and 15.7% lower than the total planned volumes forecasted for the FMP's that were in place ten years previous, in 1996. The increase in planned harvest volume for the amalgamated FMP can be attributed to the area reclassified from Barren and Scattered and NSR as shown in Figure 1 as well as a marginally more favourable age class distribution in the amalgamated forest and the associated effect on available harvest area calculations. Worthy of note is the decreasing difference between planned versus actual harvest volume since 1999. This can be attributed to refined yield curve information incorporated in forest management planning for the purpose of strategic planning. However, differences are continued to be expected until such time where improvements to the forest resource inventory are made. Looking forward to the current development of the 2011 Timiskaming FMP, the planned volumes are anticipated to remain at approximately the same levels calculated for the 2006 Timiskaming FMP. A comparison of planned vs. actual volumes and planned vs. actual harvest area can be found in section 5.0.



5.0 SUMMARY OF PLANNED AND ACTUAL DEPLETION AREA

Table 4a through to 4f in Appendix IV shows the summary of planned and actual depletion area for the five former management units (Periods 1 through to 3), Period 4 and Period 5. All harvest areas have been annualized for the indicated period. Overall, the planned harvest area steadily decreased for the first three periods following an increase in 2001 and returning back in 2006 to planned annual harvest levels comparable to 1999.

The increase in planned annual harvest area for the 2001 FMP Benchmark Date can be attributed, in part to the area reclassified from Barren and Scattered and NSR as shown in Figure 1. In addition, a more favorable and balanced age class distribution resulting from the amalgamated forest and the associated effect on available harvest area calculation have contributed to the 15% increase from 1999 levels. The planned annual harvest area for the 2006 FMP remains at par with the total planned harvest area forecasted for the forest management plans that were in place in 1999. Preliminary figures in the development of the 2011 FMP have a projected annual harvest area 9,209 ha which corresponds to 1999 and 2006 levels.

Table C. Comparison of actual versus planned harvest area and volume (%)

	Timiskaming			Plonski			Elk Lake			Watabeag			ShiningTree				Timiskaming Forest	Timiskaming Forest
Period	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	4	4	5
Actual vs. planned area (%)	80	49.9	96.6	89.2	100	96.2	55.2	87.1	93.9	66.3	87.4	100.5	68.9	86	73.8		82.3	90.2
Actual vs. planned volume (%)	56.4	50.3	117	79.5	115.3	129.5	77.4	95.7	94.7	93.1	91.2	95.9	104.4	77	104.6		104.3	107.9

As can be seen in Table C, there is considerable variation in the achievement of harvest volumes in comparison to actual harvest area. For Period 1 the Timiskaming and Plonski management units both significantly underachieved planned harvest volumes after factoring harvest area underachievement. For both periods 2 and 3 this trend seems to have been mitigated however the history of these management units, particularly the Timiskaming, has been to allow both official and “unofficial” or unplanned carryover of stands into subsequent planning periods. Tracking of this carryover area was not optimal therefore the volumes recorded include area not forecasted in the planned figures. Yields from mixedwood sites were extremely variable due to inaccuracies in the FRI as well as poor growth and yield data for these stands. The Elk Lake and Watabeag management unit had overall consistent achievement of planned harvest volumes after factoring the harvest area underachievement.

Periods 1 through to 4 for the ShiningTree Forest Management demonstrate difficulties in the estimation of planned harvest volumes and planned harvest area compared to actual. As noted in past manager’s reports for the 2001 and 2006 IFA and in associated RPFO’s, there is a trend in underestimating planned jack pine volumes. Although this trend is also observed in Period 4 of the 2001-2006 Timiskaming Forest, the discrepancy is not considered significant. This



underestimation of planned jack pine volume was examined during the production of the 2006-2026 Timiskaming Forest Management Plan and revisited in the current development of the 2011 Timiskaming Forest Management Plan. The planning team compared actual volumes achieved to planned yield to determine if any significant differences existed. Yields, species composition and age of the previous forest to the amalgamated forest were reviewed. Report of Past Forest Operations, Trend Analysis and 2004 IFA for the Timiskaming Forest as well as the 2006 ShiningTree Forest IFA were used. In reviewing actual yields between plans over a longer period, 2001 ShiningTree FMP yield curves were consistently lower than the 2001 Timiskaming FMP. While SFMM uses modified mixed species yield curves to calculate strategic or long term harvest levels, non-adjusted local yield tables are used to calculate planned stand volumes. In addition to this issue, the chronic underestimation of planned jack pine volume can also be attributed to the underestimation of species composition and stocking in the FRI. It is suspected that the complexity in photo interpretation of a relatively young forest (i.e. 45 yrs) is partially responsible, especially on the former ShiningTree Forest management unit. There is also a suspected age and site class disconnect in specific areas of the ShiningTree Forest management unit which would significantly underestimate planned volumes. However, limited information has been available in support of this observation. A newer inventory was expected following the completion of the 2006 FMP, which would have addressed some of these inconsistencies. However, the 1986 inventory remains the most appropriate source of information available in the development of the 2011 Timiskaming Forest management plan. Without adjustments made to the FRI, differences between planned and actual volumes will persist and are anticipated.

An overestimation of planned hardwood volumes (i.e. poplar and white birch) when compared to actual results has been observed. For forest units such as poplar and birch the source of the error is suspected to be an overestimation of species composition and stocking in the FRI due to the relatively young forest at the time of photo-interpretation. As discussed above, it is a known drawback that has been considered to a limited extent for improving forecasted yield in the development of strategic forest management plans in this region. Yield curves are adjusted for Strategic Forest Management Model (SFMM) based on actual harvest volumes with input from MNR district staff, MNR regional Growth and Yield specialist, shareholder companies planning staff and TFAI/STFI sampling data. Since adjustments to the mixed species curves used in SFMM have occurred, and are continually refined, the calculation of sustainable harvest levels, with the resulting AHA for each forest unit has been addressed. It is suspected that the use of the non-adjusted pure species yield curves, site class cross reference tables and more importantly the FRI stand level information have led to the differences in planned vs. actual volumes recovered from the calculated harvest area. In 2006 and subsequently in 2011 the TFAI introduced a long-term incremental stepped approach to improving forecasted volumes by adjusting growth and yield projections. The intent to this approach is to confirm yield curve development based on existing field data rather than to modify yield curves in an attempt to compensate for known discrepancies in the FRI (age, site class, composition) and improve the accurate forecasts of yield from previous periods within the forest practitioner's control. The 2006 Timiskaming FMP details the methodologies utilized to improve forecasted yield in Section 2.3.3.2.2 and Appendix 11 of the 2006 Timiskaming Forest Management Plan. The 2011 Timiskaming FMP planning team has built on these efforts.



The overall trend for the first three periods for each of the management units shows an increase in overall utilization of the available planned harvest area. With the exception of 2001 FMP Benchmark Date, it appears that the gap between planned and actual harvest area is narrowing as we move through time. It is difficult to determine any trends by forest unit since they have changed dramatically during the trend analysis period. However, some general conclusions can be drawn and discussed. Utilization of spruce dominated forest units has been inconsistent throughout the trend analysis period. The lowland spruce sites have had historically high levels of bypass due to poor volume recovery and fluctuating pulp roundwood markets. Many of the upland spruce stands in the Elk Lake, Timiskaming and Plonski management units are reclassified balsam fir stands that were infested with spruce budworm. Low stocking and low volumes characterize these stands and this has led to lower utilization levels. Jack pine dominated forest units have been well utilized historically regardless of the management unit. The relatively pure stands are characterized with flat topography, good access and low levels of bypass, all of which contribute to high utilization. Poplar dominated forest units have shown a steady increase in utilization due to the presence of a good market for OSB material over time. Currently, any under harvest of these forest units can be attributed to operational constraints and not the availability of a market. As can be seen in Table 3, utilization of white birch volumes is low and the resulting utilization of birch dominated forest units has followed suit. In the past, white birch stands were operated for the conifer component and any birch stands that did not have adequate conifer was bypassed. This trend has changed and an increase in utilization of these sites can be attributed to both stricter silvicultural ground rules that preclude highgrading of these stands for the conifer (and leaving them in a condition that does not allow adequate regeneration) and the development of a market for birch in OSB.

Period 5 consists of annualized data from year one and two of the current 2006 Timiskaming Forest FMP. While it appears that overachievement of volumes may occur for this plan, careful examination of Period 5 data in table 4 shows that the harvest activity for the first two years have favoured those forest unit stands (PJ1, PO1, BW1 and MW1) with the highest expected yields. This has occurred due to changes in mill inventory policies of the shareholder companies as well as an attempt to lower unit costs to better compete during the worst economic downturn and global recession seen since World War II. Major forest industry players have managed to maintain operations at reduced capacity by primarily sourcing wood from the Timiskaming Forest. This has maintained utilization levels for now, but given the volatility of markets expected for another 18 months (April, 2011), actual achievement levels could be much different than currently shown. In addition, in the final three years of the FMP, the remaining, lower-than-average yield stands will be harvested and it is expected that actual total volumes relative to actual area harvested could be comparable to forecasted values.



6.0 SUMMARY OF MANAGED PRODUCTIVE FOREST BY AGE CLASS

Table 5 in Appendix V shows the summary of managed productive forest by age class. As described in the introduction and Section 3.0, there is inherent complexity in describing five original management units with different planning horizons and different forest units, particularly in the context of the amalgamated Timiskaming Forest. Since the forest units vary between management units as well as over time, this has led to difficulty in describing the changes in the age class distribution by forest unit. Nevertheless there are trends that can be drawn from Table 5 and the associated graphs.

Overall the Timiskaming Forest is a relatively young forest with the average age in the 61-80 year age class. This is uncharacteristic of many management units in the boreal forest and can be attributed directly to the fire history in the 1910-1940 period. The availability of overmature forest is limited due to both fire history as well as past harvesting strategies that favoured “oldest-first” allocation. This has led to an abundance of area in the 0-20 age classes, significantly less area in the 21-40 and 41-60 age classes and an abundance of area in the 61-80 age class. A steady decline in area can be seen from the 81-100 year age class with relatively small amounts of area on the landbase that are older than 120 years. As can be referenced in the 2001 FMP’s, this has led to challenges in meeting the Marten core area requirements since the amount of suitable habitat on the landbase was minimal. The strategy implemented for the amalgamated plan was to locate the core areas in locations that had high habitat capability, and then allow the forest to age and grow suitable core habitat conditions. To a lesser extent, the provision of old growth follows a similar approach. The overmature age classes have remained relatively stable over the trend analysis period with some modest increases in the 81-100 for the 2006 FMP Benchmark Date. Area in the age class >160 has seen an increase of over 12% between 2001 and 2006 FMP Benchmark Date. This reflects in part the implementation old growth policy but also the age class slowly migrating to an older age class.

The difference in area within an age class between 1991 and 2006 FMP Benchmark Date for the 0-20 year age class has decreased by 9.6 % reflecting the reduction in planned harvest area over time described in section 3.0 and 4.0. The amount of area in the 21-40 year age class has increased by 31.2% and is due to some of the older forest in the 0-20 age class moving up to the next age class. As for the 41-60 and 61-80 year classes, these have shown a decrease of 69.9% and an increase of 35.3%, respectively. The difference in changes within age classes is dramatic and is believed to be as a result of a shortfall of area from the preceding younger age-class, replenishing the following age-class. This is expected given the unbalanced age-class structure in the between 21 and 80 years. During the development of the 2001 amalgamated FMP for the Timiskaming Forest the age class gap was recognized and the SFMM modeling exercise included exploring a number of scenarios for implementing management strategies to mitigate short to medium term wood supply trends. A complete description of the wood supply analysis can be referenced in Appendix 13 of the FMP. This effort was followed by additional measures taken for the development of the 2011 Timiskaming FMP. Finally, through similar analysis during the current development of the 2011 Timiskaming FMP, it was estimated that it would require between 90 to 110 years in order to produce the expected natural age class structure of the Timiskaming Forest.



7.0 SUMMARY OF RENEWAL, TENDING and PROTECTION OPERATIONS

Table 6 shown in Appendix VI is the summary report of renewal, tending and protection operations for each management unit planning period. With the exception of the ShiningTree Forest, TFAI assumed formal management responsibilities with the issuance of the Timiskaming Forest SFL in 1998 however, from the fall of 1996 to April 1st, 1998 TFAI assumed silvicultural implementation responsibilities for all existing plans (not included was the ShiningTree Forest). For all former management units the effect of government fiscal constraints is apparent with the actual achievement of planned targets consistently low. Once the CFSA became legislated and the Forest Renewal Trust Funds were implemented, dedicated sources of funding became available for silvicultural project work. During the phase-in period, TFAI with the cooperation of the MNR District, had direct access to Special Purpose Account (SPA) funds and began assessing silvicultural requirements for the future amalgamated landbase (Period 4 – Timiskaming Forest). At the time, actual recent renewal effort as well as the planned silvicultural levels in existing management plans were deemed to be below sustainable levels. The amount of accumulating NSR/B&S area in Table 1 illustrates this trend. Consequently, the company undertook a complete review of all recent harvest and regeneration work and developed a silvicultural strategy with the objective of developing a renewal plan, complete with projected budget estimates to bridge the period up to the amalgamated Timiskaming FMP in 2001. The results of this strategy are apparent as shown in the graph detailing silvicultural levels by FMP Benchmark Date. The 1998, 1999 and 2000 renewal levels show immediate increases in site preparation, artificial regeneration and tending levels in order to renew silvicultural backlog areas while the sites were still economically treatable. Another contributing factor in the overachievement of silvicultural targets in the period was the renewal of the Watabeag wildfire area and some regeneration work carried out on unplanned carryover harvest area in the former Timiskaming/Plonski management units. Figure 2 shows the number of trees planted on the amalgamated landbase from 1995 to the projected levels in 2010.



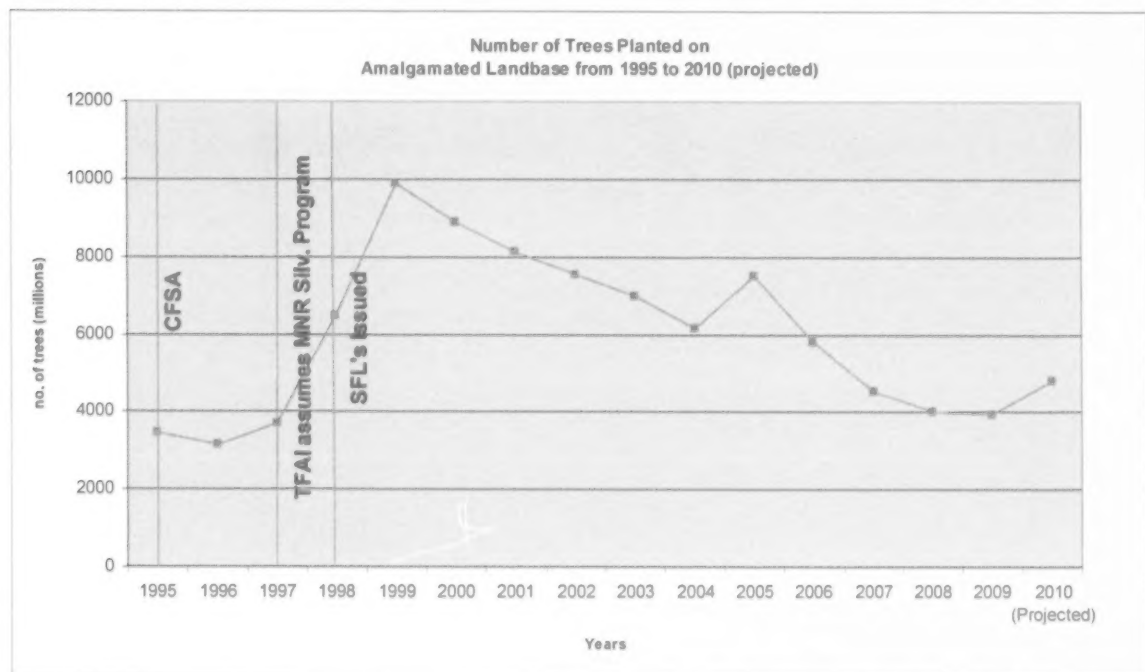


Figure 2. The number of trees planted by year on the Timiskaming Forest (includes all former units) from 1995 to (2010) projected.

Table D demonstrates a chronic underachievement of natural regeneration planned levels with a few exceptions being the Timiskaming management unit for Period 1 and 3 and the Watabeag management unit for Period 3. The overall underachievement of planned natural regeneration levels trend for the ShiningTree Forest management unit is consistent through to and including Period 4. In this case, the issue at hand stemmed from postponing the declaration of these sites for natural regeneration until such time where the assessment of natural regeneration success has actually occurred. This postponement provides an opportunity to evaluate the natural conifer component prior to declaring the site as naturally regenerated. The data would also suggest that a plausible explanation of the underachievement in natural regeneration is the lag time in assessment work in an attempt to capitalize on natural regeneration of potential mixedwood sites. The chronic underachievement of the planned volume for the ShiningTree were recognized during the development of the 2006 FMP and consequently early indications from results of the 2nd year 2006 Timiskaming FMP annual reports indicate that actual levels to date are comparable to planned.

Planned and actual artificial regeneration and site preparation treatments show gradual increases in most of the individual management units over the trend analysis periods, reflecting the post CFSA/SFL period of increased renewal activities. While some planned prescribed burn areas were present in the management plans for periods 1 and 2, no prescribed burns were implemented. No prescribed burns have been planned in any of Period 3 or 4 and 5 FMP's reflecting a trend of implementing low cost and minimal risk methods of preparing sites for regeneration.



Tending activities on the amalgamated forest area showed overall underachievement for the first two FMP Benchmark Dates followed by increases in tending for Periods 3 and 4 reflecting the requirement to tend the silvicultural blitz undertaken during Period 1 and 2 which included backlog silvicultural areas as well as Y and Z lands.

Pre-commercial thinning activities were underachieved in the first three periods for all forest management units (ShiningTree being the exception). However, recent thinning activities, starting in Period 3 on the ShiningTree Forest management unit following into period 4 and ongoing in the current period, have increased dramatically. The rationale for this increase includes efforts to offset future wood supply reductions as well as providing opportunities for local First Nations/First Nations entrepreneurs to develop silvicultural capacity. It is expected that pre-commercial thinning efforts will continue into the future, however these tending treatments are often supported through funding sourced from the Forestry Future Trust Fund, and in recent years the fund has been under fiscal pressure due to the economic down turn in the forest industry.

Table D. Actual percent of planned FMP targets by management unit and period.

	Timiskaming			Plonski			Elk Lake			Watabeag			ShiningTree				Timiskaming Forest	Timiskaming Forest
Period	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	4	4	5 (06-08)
Nat Regen	183	9.2	112	33	8.8	35.9	37	12.4	11.8	52	23	416	30	37	33.9		84.4	43
Art Regen	68.2	75	74.6	84	112	101	82	79.7	136	85	53	124	49	129	118		95.9	28.8
SIP	56.7	37	117	40	81.4	148	47	148	119	56	92	123	38	110	118		110.6	34.3
Tending	74.1	20	57.1	51	156	60.8	37	150	261	66	40	233	29	101	126		114.8	28

Although not discernable from Table 6, there is considerably more diversity in silvicultural treatments that have been implemented on the amalgamated forest. Careful logging around advanced regeneration has become a common practice on the forest, especially those targeted mixedwood sites. As well, different site preparation treatments including bracke, Young's teeth, straight and shear blading, passive trencher as well as power trencher are utilized. Chemical site preparation treatments are increasing as a result of a shift in focus to control competitive vegetation on sites prior to artificial treatments rather than tending afterward. While aerial chemical site preparation is the predominant treatment, ground treatments using an Air Blast Sprayer as well as backpack treatments have been increasing recently. The company has also embraced the use of exponentially fertilized nutrient loaded black and white spruce seedlings. The result of using this type of stock on competitive sites has been very encouraging. Both the ground chemical site preparation treatments as well as the use of nutrient loaded stock are key components of managing mixedwood sites. As well, the company piles, burns or removes slash on all sites, regardless of renewal intensity.

In summary, during the period of government fiscal restraint, harvesting activities continued while silvicultural backlog accrued. Upon assuming management responsibilities for the landbase, and with dedicated funding available in the Forest Renewal Trust, TFAI assessed all backlog silvicultural areas and immediately undertook an aggressive silvicultural program to renew these sites. In addition, the company has been surveying and treating backlog area with the objective of regenerating all of these sites to current silvicultural ground rule standards as encountered through TFAI regular silvicultural program. The current objectives and targets in the 2006 FMP demonstrate the company's commitment to sustainable silviculture on the Timiskaming Forest.



8.0 HARVESTED AREA SUCCESSFULLY REGENERATED – SUMMARY OF ALL FOREST UNITS

Table 7 in Appendix VII shows the harvested and successfully regenerated summary of all forest units. The instructions detailed in the IFAPP for the completion of this table state that the area harvested five years preceding the audit date less ten years must be tracked for regeneration success. The data that would allow this level of analysis either does not exist or is fairly comparable and therefore an alternate method for displaying renewal success was developed. When the annual report data was reviewed for this period it is clear that the level of survey work completed was below required levels. On many occasions some area appears to have been surveyed but once the data was sent away for analysis it either was never returned or, if the data was available, the entry of this information into the forest inventory was not completed or documented. For the purposes of producing this table, a comparison of all area harvested versus the area surveyed for the first three planning periods was completed. The results show that there was a chronic underachievement of surveying harvested areas for all management units specifically in the 1991 FMP Benchmark Date. Section 2 of this analysis details the accumulation of barren and scattered and NSR area on the landbase.

Due to the nature of this analysis, where available, the periods correspond to the Total Area Harvested and not the Harvested Area Successfully Regenerated. The Area Surveyed for Regeneration corresponds to the post 5-year period following the Total Area Harvested period. As described in Table 7, FMP Benchmark year 1991 had an accumulation of unsurveyed area. A great deal of this outstanding area was addressed through the X, Y, Z efforts in the following periods, and continues to be tracked today. Only two years of surveys have been conducted for the 2001 FMP Benchmark Date. A total of 27,942 ha were surveyed in the first two years of this FMP. Surveys completed in year 2 of the 2006 Timiskaming Forest included the Watabeag Fire and do not coincide with the area identified in the total area harvested. The current percent area surveyed declared successfully regenerated is 67.5% and is expected to be above 100% due to the additional accrued due from the Watabeag Fire. Annual surveys are carried out based on an internal tracking system annually identifying areas eligible for review of free to grow status.

As previously discussed, at the time that the company assumed management responsibilities for the forest it was clear that the level of accumulated NSR/B&S area was unacceptable. The following are the definitions of X, Y, Z and Backlog land:

- X Lands: Harvested after April 1, 1995
- Y Lands: Harvest pre-1995; SPA funds spent on renewal
- Z Lands: Harvested pre-1995; artificially regenerated without SPA funds; TFAI and/or STFI responsible for tending if required, if tending not successful or infeasible then area reclassified as backlog.



- Backlog:** Cut and run (includes areas classified as naturally FTG by MNR) for areas harvested post 1990 except former Watabeag management unit – harvested post 1985
- B&S:** All other area classified as barren and scattered in the FRI

The data used to classify X, Y and Z lands was also considered suspect on the former Timiskaming Forest (Period 4). As a result an aerial survey of all Backlog/NSR and XYZ land was scheduled in 1998 and a subsequent barren and scattered survey was completed in 1999 in order to provide an updated inventory for the development of the 2001 Timiskaming FMP for the amalgamated forest (Period 4). The surveys were considered a Forest Resources Inventory update exercise and conducted on the amalgamated landbase of the Timiskaming Forest (Period 4) and not tracked by former management unit. Table E shows the results of both surveys recorded. In order to further clarify the status of Y, Z and Backlog area, the following table summarizes the status of this area as of January 2004. Similarly, ShiningTree Forest management unit has had to manage X, Y, Z land. An exercise requiring a cross reference between the original X, Y, Z mapped area (hard copy in this case) and the updated digital free-to-grow information was used to determine the outstanding area of Y, Z and Backlog land requiring further treatment. Table E shows the result of this exercise as of July 31 2006. The total net outstanding untreated area between the Timiskaming Forest and ShiningTree Forest is 1,935 hectares.



Table E. Status of Y and Z land areas on the Timiskaming Forest (Period 4) as of January, 2009.

Land Classification	Y	Z	Backlog	Total
Original Area (ha)	6,125	15,543	21,090	42,758
Area Declared FTG or Otherwise Reclassified				
Classified as FTG in 1998	2,396	11,470	15,150	29,016
Classified as FTG in 1999,2000	410	1,393	213	2,016
Classified as Natural Regen in 2000	0	0	196	196
Reclassified to non-productive	0	19	23	42
Classified as FTG in 2001	1,123	1,838	106	3,067
Classified as FTG in 2002, 2003	791	160	3,073	4,024
Sub-total FTG and other reductions	4,720	14,880	18,761	38,361
Subtract Net Outstanding area in OLL Park area			-243	-243
Net Outstanding Area (as of Jan, 2004)	1,405	663	2,086	4,154
Area Accrued (since Jan, 2004)	1,405	240	1,237	2,882
Net Outstanding Untreated Area (as of Jan, 2009)	0	423	849	1,272

Table F. Status of Y and Z land areas on the ShiningTree Forest (Period 4) as of July 31, 2006.

Land Classification	Y	Z	Backlog	Total
Original Area (ha)	3,632	451	4,335	8,418
Area Declared FTG	3,196	419	4,261	7,876
Net Outstanding Area	436	32	74	542

As can be determined from the summary tables above, TFAI and STFI have been aggressively working towards regenerating all Y and Z lands since assuming the SFL's. X lands are considered a part of the normal silvicultural program and therefore are not shown in these tables. Under the condition of the SFL, the company has no silvicultural liability for areas classified as Backlog however these areas remain an important part of the annual silvicultural program and TFAI is committed to continuing to treat these areas when feasible. Since the last 1999-2004 Timiskaming



Forest IFA, a total of 2,882 hectares of area has been accrued, leaving a net outstanding untreated area of Y, Z and Backlog of 1,814 hectares.

The 2006 FMP has detailed silvicultural objectives and renewal targets designed to ensure that the levels of silviculture will continue to support the sustainable harvest levels on the Timiskaming Forest.



APPENDIX I

TABLE 1 - Summary of Total Area Under Management



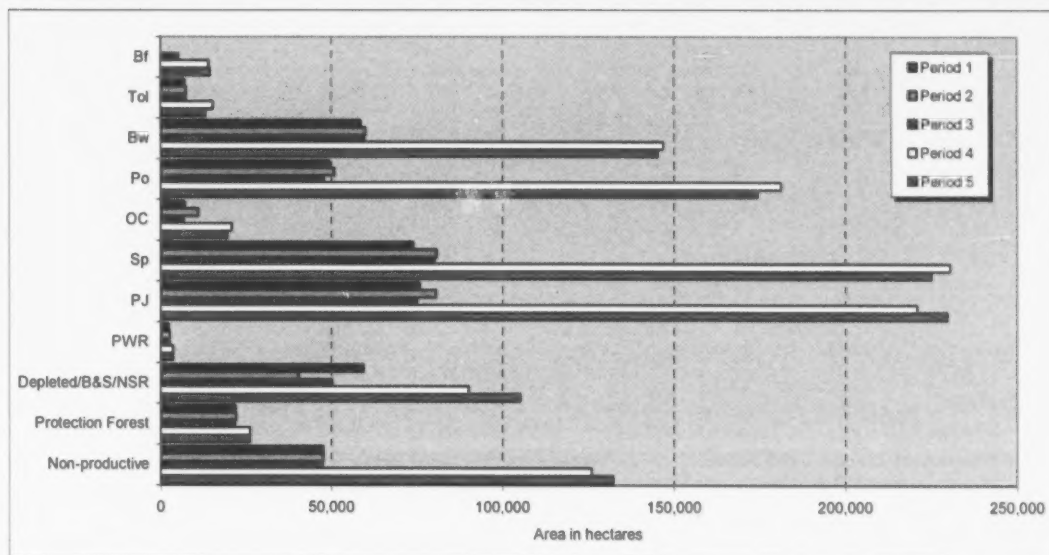
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Table 1a - Summary of Total Area Under Management

Past and Current Plans - Crown Managed

MU: Elk Lake

Land Type	Area in hectares				
	Past Plans				Current
	Period 1	Period 2	Period 3	Period 4	Period 5
Non-Forested	40,191	40,191	36,012	105,799	95,233
Other Land	3,791	3,791	3,701	21,277	7,164
Forested					
Non-productive	47,703	47,703	47,340	125,960	132,313
Productive	-	-	356,001	948,897	956,698
Protection	21,904	22,073	21,655	26,088	26,112
Production Forest					
B&S / NSR	59,474	40,393	50,192	22,729	19,266
Depleted	-	-	-	67,301	86,011
Working Group					
PWR	2,335	2,558	2,533	3,512	3,604
PJ	75,817	80,448	75,027	220,976	229,802
Sp	73,949	80,781	80,153	230,495	225,071
OC	6,979	10,974	6,727	20,778	19,577
Po	49,275	50,828	47,781	181,265	174,456
Bw	58,592	59,942	59,546	146,846	145,309
Tol	7,042	7,408	7,195	15,194	13,056
Bf	-	-	5,193	13,924	14,433
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
Total Production Forest	333,463	333,332	334,347	923,020	930,585
Total Forested Land	403,070	403,108	403,341	1,075,068	1,089,010



Source: FMPM (1996 & 2004) FMP - 1 and 2
 TPM Table - 4.8.2



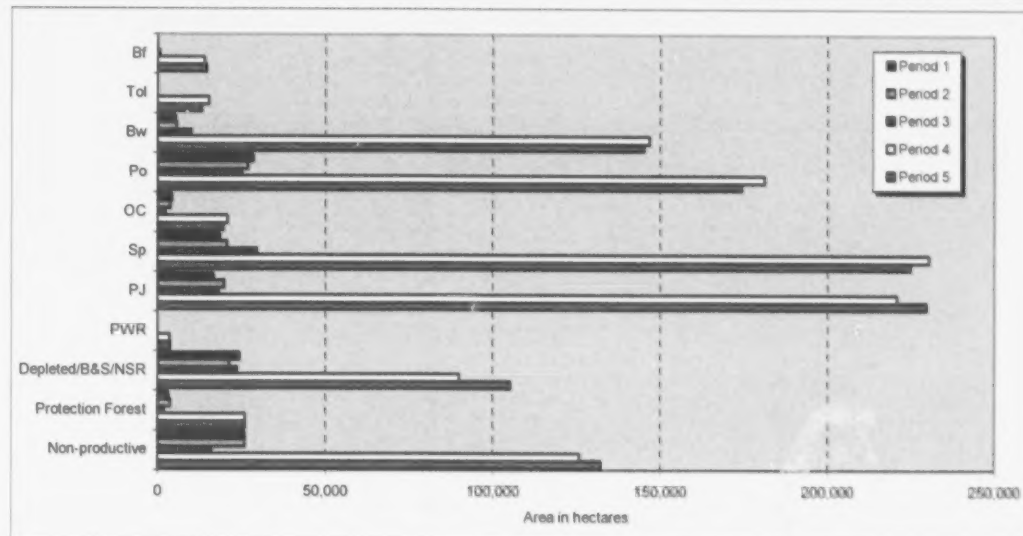
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Table 1b - Summary of Total Area Under Management

Past and Current Plans - Crown Managed

MU: Watabeag

Land Type	Area in hectares				
	Past Plans				Current
	Period 1	Period 2	Period 3	Period 4	Period 5
Non-Forested	8,809	8,809	9,888	105,799	95,233
Other Land	1,572	1,572	3,725	21,277	7,164
Forested					
Non-productive	26,054	25,884	16,003	125,960	132,313
Productive	-	-	110,893	948,897	956,898
Protection	3,288	3,751	1,917	26,088	26,112
Production Forest					
B&S / NSR	24,242	21,375	23,606	22,729	19,266
Depleted	-	-	-	67,301	86,011
Working Group					
PWR	128	13	-	3,512	3,604
PJ	16,602	19,779	18,241	220,976	229,802
Sp	18,446	20,657	29,548	230,495	225,071
OC	4,195	3,733	2,157	20,778	19,577
Po	28,417	26,867	25,080	181,265	174,456
Bw	5,394	5,730	9,800	146,646	145,309
Tol	6	9	-	15,194	13,056
Bf	-	-	454	13,924	14,433
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
Total Production Forest	97,428	98,163	108,976	923,020	930,585
Total Forested Land	126,770	127,798	126,896	1,075,068	1,089,010




Source: FMPM (1996 & 2004) FMP - 1 and 2
 TPM Table - 4.8.2



Past and Current Plans - Crown Managed
MU: Timiskaming

Horizontal bar chart showing the area in hectares for different land use categories across five periods. The x-axis represents the area in hectares, ranging from 0 to 250,000. The y-axis lists the land use categories. The legend indicates five periods: Period 1 (black), Period 2 (dark grey), Period 3 (medium grey), Period 4 (light grey), and Period 5 (white).

Land Use Category	Period 1	Period 2	Period 3	Period 4	Period 5
BF	~15,000	~15,000	~15,000	~15,000	~15,000
Tol	~15,000	~15,000	~15,000	~15,000	~15,000
Bw	~25,000	~25,000	~25,000	~25,000	~25,000
Po	~15,000	~15,000	~15,000	~15,000	~15,000
OC	~15,000	~15,000	~15,000	~15,000	~15,000
Sp	~15,000	~15,000	~15,000	~15,000	~15,000
PJ	~15,000	~15,000	~15,000	~15,000	~15,000
PWR	~15,000	~15,000	~15,000	~15,000	~15,000
Depleted/B&S/NSR	~15,000	~15,000	~15,000	~15,000	~15,000
Protection Forest	~15,000	~15,000	~15,000	~15,000	~15,000
Non-productive	~15,000	~15,000	~15,000	~15,000	~15,000



Timiskaming Forest Alliance Inc.

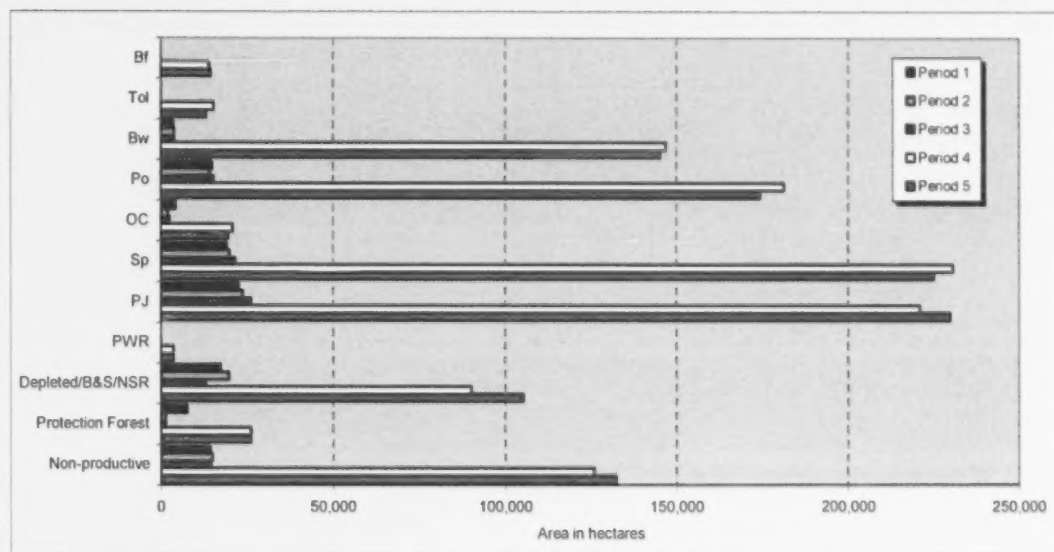
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Table 1d - Summary of Total Area Under Management

Past and Current Plans - Crown Managed

MU: Plonski

		Area in hectares				
		Past Plans				Current
Land Type		Period 1	Period 2	Period 3	Period 4	Period 5
Non-Forested		4,123	4,775	4,783	105,799	95,233
Other Land		1,307	1,258	1,271	21,277	7,161
Forested					-	
Non-productive		14,245	14,854	14,425	125,960	132,313
Productive		-	-	-	948,897	956,698
Protection		7,594	1,287	1,320	26,088	26,112
Production Forest					-	
B&S / NSR		17,342	19,752	12,927	22,729	19,266
Depleted		-	-	-	67,301	86,011
Working Group					-	
PWR		9	6	6	3,512	3,604
PJ		22,492	23,807	26,184	220,976	229,802
Sp		19,231	20,011	21,581	230,495	225,071
OC		4,160	2,059	2,464	20,778	19,577
Po		14,870	14,334	15,238	181,265	174,456
Bw		3,688	3,938	3,768	146,846	145,309
Tot		-	-	-	15,194	13,056
Bf		-	-	-	13,924	14,433
		-	-	-	-	-
		-	-	-	-	-
		-	-	-	-	-
		-	-	-	-	-
		-	-	-	-	-
Total Production Forest		81,792	83,907	82,168	923,020	930,585
Total Forested Land		103,631	100,048	97,913	1,075,088	1,089,010



Source: FMPP (1996 & 2004) FMP - 1 and 2

TMPM Table - 48.2

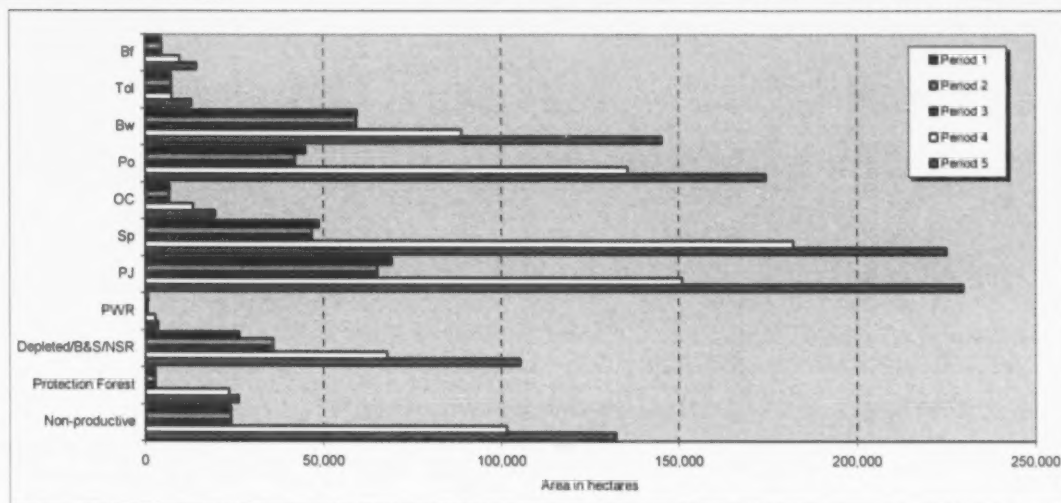
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Table 1e - Summary of Total Area Under Management

Past and Current Plans - Crown Managed

MU: ShiningTree Forest

Land Type		Area in hectares					
		Past Plans				Current	
		Period 1	Period 2	Period 3	Period 4		
					Shin		Tim
Non-Forested		31,272	31,272	31,272	28,586	77,213	95,233
Other Land		2,572	2,572	2,572	2,647	18,630	7,164
Forested							
Non-productive		24,049	24,049	24,049	24,385	101,575	132,313
Productive				-	267,207	681,690	956,698
Protection		2,701	2,700	2,700	2,707	23,381	26,112
Production Forest							
B&S / NSR		26,337	35,846	35,846	6,953	15,776	19,266
Depleted		-	-	-	15,373	51,928	86,011
Working Group							
PWR		709	560	560	790	2,722	3,604
PJ		69,166	65,165	65,165	70,061	150,915	229,802
Sp		48,679	46,671	46,671	48,415	182,080	225,071
OC		6,842	6,719	6,719	7,316	13,462	19,577
Po		45,064	42,107	42,107	45,564	135,701	174,456
Bw		59,456	59,164	59,164	58,094	88,752	145,309
Tol		7,322	7,322	7,322	7,760	7,434	13,056
Bf		4,532	4,554	4,554	4,175	9,749	14,433
		-	-	-	-	-	-
		-	-	-	-	-	-
		-	-	-	-	-	-
		-	-	-	-	-	-
Total Production Forest		268,107	268,108	268,108	264,501	658,519	930,585
Total Forested Land		294,857	294,857	294,857	291,503	783,475	1,089,010



Source: FMPM (1996 & 2004) FMP - 1 and 2
TMPM Table - 4.8.2



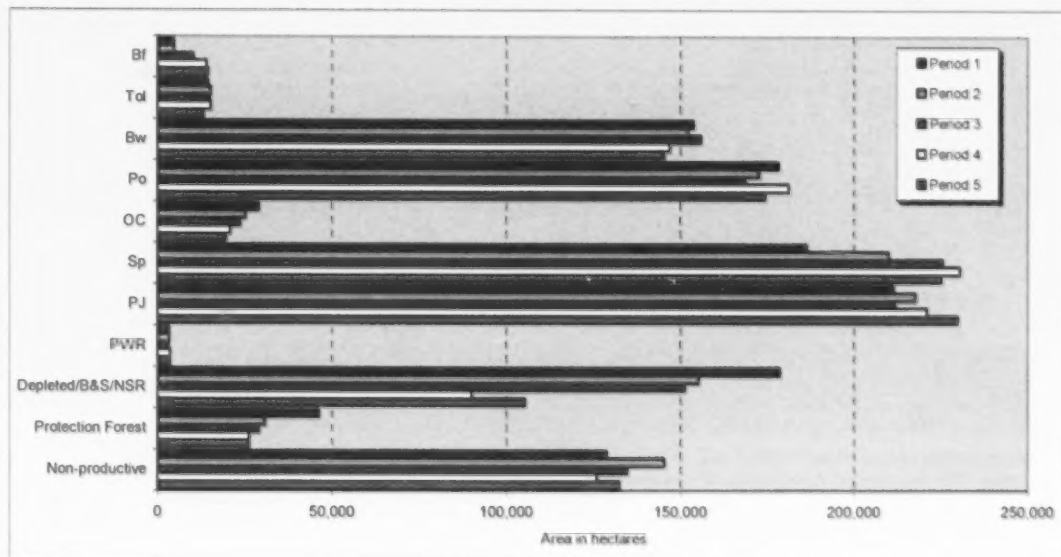
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Table 1f - Summary of Total Area Under Management

Past and Current Plans - Crown Managed

MU: Timiskaming Forest

Land Type	Area in hectares				
	Past Plans				Current
	Period 1 1991	Period 2 1996	Period 3 1999	Period 4 2001	Period 5 2006
Non-Forested	107,335	110,320	107,003	105,799	95,233
Other Land	16,991	19,642	21,454	21,277	7,164
Forested					
Non-productive	128,759	145,276	134,716	125,960	132,313
Productive	-	-	466,894	948,897	956,698
Protection	46,340	30,672	28,941	26,068	26,112
Production Forest					
B&S / NSR	178,740	155,289	151,389	22,729	19,266
Depleted	-	-	-	67,301	86,011
Working Group					
PWR	3,342	3,228	3,200	3,512	3,604
PJ	211,447	217,670	211,834	220,976	229,802
Sp	186,543	209,953	225,644	230,495	225,071
OC	29,019	25,223	23,621	20,778	19,577
Po	178,405	172,712	168,753	181,265	174,456
Bw	153,888	152,334	155,972	146,846	145,309
Tol	14,370	15,278	15,002	15,194	13,056
Bf	4,532	4,554	10,231	13,924	14,433
Total Production Forest	960,286	956,241	965,646	923,020	930,585
Total Forested Land	1,135,385	1,132,189	1,129,302	1,075,068	1,089,010



Source: FMPM (1996 & 2004) FMP - 1 and 2
 TMPM Table - 4.8.2



APPENDIX II

TABLE 2 – Description of Forest Units



2008 Independent Forest Audit

Table 2a - DESCRIPTION OF FOREST UNITS (FMP-8)

Management Unit - Elk Lake

Period 1

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Pj	Jack Pine	Conifer	WG-Pj	Prime site fine textured soils. Silty loam to clay. Fresh moisture regime. Deep soils. Prime site fine to very fine sand and silty loam. Textured soils. Fresh moisture regime. Pj found in association with Po & Sp. Intermediate site. Soil texture is variable ranging from fine to coarse sands. Soil characteristics of till deposits. Fresh to dry moisture regime. Deep soils. Pj found in association with spruce, balsam fir, poplar and birch. Intermediate site. Poorly drained - wet moisture regime. Deep soils. Pj found in association with spruce. Intermediate site. Mineral soil depth less than 1 metre over bedrock. Soil textures range from sand to clay. Dry to fresh moisture regime. Intermediate site. Mineral soil depth less than 1 metre over bedrock. Soil textures range from sand to clay. Soil moisture regime is dry. Very shallow sites. Less than 30 cm. Mineral soil over bedrock. Moisture regime-very dry.	Clearcut		
Sh	Black Spruce	Conifer	WG-Sh	Prime site. Upland - silty to clay textured soils. Fresh moisture regime. Black spruce found in association with jack pine, balsam fir and poplar. Intermediate site. Less than 40 cm of organic material. Imperfectly drained. Intermediate site. Less than 40 cm of organic material. Poorly drained. Non-prime organic. Very wet. Organic matter greater than 40 cm. Spruce found in association with tamarack.	Clearcut		
Bl	Balsam Fir	Conifer	WG-Bl	All sites usually found in association with spruce, jack pine, poplar, white birch.	Clearcut		
Ok	Other Conifer	Conifer	WG-Ok	All sites	Clearcut		
Po	Poplar	Intolerant hardwoods	WG-Po	Prime sites textures range from silty loams to clayey material. Good drainage. Fresh moisture regime. More than 30 cm. Mineral soil over bedrock. Prime site soil texture is predominantly coarse, sandy loams. Full material. Well drained. Fresh moisture regime. Intermediate site. Dry, coarser, sandy soils. Po found in association with Pj. Intermediate site. Soil texture is predominantly fine textured, silty loams. Imperfectly drained. Moisture regime ranges from fresh to wet. Po found in association with Sh and Sp. Intermediate site. Poorly drained. Moisture regime is wet. Po is usually found in association with Sh or Pj. All Sites	Clearcut		
Bw	White Birch	Conifer	WG-Bw		Clearcut		



Period 2

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Subcultural System	FRI Parameters & Criteria	Additional Information
1	Other Hardwood	Tolerant Hardwoods	Maple All	Tolerant hardwoods Associated with FEC 13, 16	Shelterwood	WG - Jb	
2	White, Red Pine	Conifer	White Pine	White Pine Jack Pine on shallow sites associated with FEC 1, 6b	Clearcut	WG - Pw	
3	Red pine jack pine	Conifer	Jack Pine	Red Pine Jack Pine on coarse sands Associated with FEC 2b, 3b	Clearcut	WG - Py	
4	Black spruce cedar larch	Conifer	Black Spruce	Black Spruce and/or cedar and/or larch on sphagnum associated with FEC 13	Clearcut	WG - Sb	
5	Black spruce white spruce cedar	Conifer	Black Spruce	Black Spruce White Spruce Cedar on moist mineral soil associated with FEC 9	Clearcut	WG - Sb	
6	Poplar	Intolerant Hardwoods	Poplar	Poplar dominated mixedwoods associated with FEC 6a, 6b, 6c, 3a, 3b	Clearcut	WG - Po	
7	Poplar	Intolerant Hardwoods	Poplar	Trembling Aspen, Balsam poplar mixedwood on moist, low lying sites associated with FEC 10	Clearcut	WG - Po	
8	Poplar	Intolerant Hardwoods	Poplar	Trembling Aspen Balsam White Spruce on fresh sites associated with 7a, 7b	Clearcut	WG - Po	
9	White spruce white birch	Conifer	White Spruce	White Spruce White Birch mixedwood associated with FEC 3a, 3b	Clearcut	WG - Sw	
10 11	Jack pine	Conifer	Jack Pine	Jack Pine lathernom herb poor FEC 2a, 2b, or 3b	Clearcut	WG - Py	
12	Black spruce Jack pine	Conifer	Black Spruce	Black Spruce Jack Pine on very fresh to moist sites associated with FEC 4, 5a, 5b, 8	Clearcut	WG - Sb	
13	Black spruce	Conifer	Black Spruce	Black Spruce, herb rich site associated with FEC 12	Clearcut	WG - Sb	
16	Black spruce	Conifer	Black Spruce	Black Spruce wet moderately wet sites herb poor associated with FEC 8, 11, 12	Clearcut	WG - Sb	

Period 3

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Subcultural System	FRI Parameters & Criteria	Additional Information
PjPar	Jack Pine Pure	Conifer	Jack Pine	1 2a 2b 3a 3b 4	Clearcut	Py → 0.7	Py 5b Stkg 1.06 S.C. 1.8
Pmix	Jack Pine Mix	Conifer	Jack Pine	2b 3a 3b 4 5a 5b 6b 8 9	Clearcut	WG - Py and Py → 0.6	Py 5 Sb2 Py2 Bw1 Stkg 0.87 S.C. 1.7
SpPar	Spruce Pure	Conifer	Spruce All	4 5a 5b 8 9	Clearcut	Sb - Sw → 0.7Sb - Sw → 0.7Sb - Sw → 0.7Sb - Sw → 0.7	Sb5 Sw1 Bw1 Stkg 0.73 S.C. 1.1
SbLow	Black Spruce Low	Conifer	Spruce Black	11 12 13	Clearcut	(Sb → 0.9 and SC → 3) or (Sb → 0.8 and Ce → 1a → 0.2) and (SC → 2 or 3) or ((Sb → 0.5 and Ce → 1a → 0.5) and (Sb - Ce - La - LH → 0.9)) and (SC → 2 or 3)	Sb5 Cx1 La1 Stkg 0.65 S.C. 2.2
Spmix	Spruce Mix	Conifer	Spruce All	2b 3a 3b 4 5a 5b 6b 8 9	Clearcut	WG - Sb or Sw and Sb - Sw → 0.6	Sb5 Sw1 Bw2 Py1 Pol Stkg 0.68 S.C. 1.1
Pw	White & Red Pine	Conifer	White Pine	1 2a 2b 3a 3b 6b 15 16	Shelterwood	WG - Pw or Py	Pol Pw2 Sw1 Bw2 Pol Stkg 0.78 S.C. 1.9
O Con	Other Conifer	Conifer	Other Conifer	9 12 13	Clearcut	WG - Ce or La or OC	Ce5 Sb2 Sw1 Pol Bw1 Stkg 0.7 S.C. 2.0
Bfir	Balsam Fir	Conifer	Balsam Fir	2b 3a 3b 4 5a 5b 6b 8 9	Clearcut	WG - Bf	Bf5 Sb2 Sw1 Pol Bw1 Stkg 0.7 S.C. 2.0
PpPar	Poplar Pure	Intolerant Hardwoods	Poplar	3a 3b 6a 6b 6c 7a 7b 10	Clearcut	Py → 0.7	Py6 Bw1 Sb1 Stkg 1.01 S.C. 2.3
Pmix	Poplar Mix	Intolerant Hardwoods	Poplar	3a 3b 6a 6b 6c 7a 7b 10 15	Clearcut	WG - Po and Po → 0.6	Py5 Bw2 Sb1 Py1 Sw1 Stkg 0.89 S.C. 2.3
BwPar	White Birch Pure	Intolerant Hardwoods	White Birch	3b 6c 7a 7b 10 15	Clearcut	Bw → 0.6	Bw6 Pol Sb1 Stkg 1.02 S.C. 2.4
BwMix	White Birch Mix	Intolerant Hardwoods	White Birch	3b 6a 6c 7a 7b 10 15	Clearcut	WG - Bw and Bw → 0.6	BW5 Pol Sb1 Sw1 Md Py1 Stkg 0.80 S.C. 2.3
Tolbdl	Tolerant Hardwood	Tolerant Hardwoods	Maple All	15 16	Shelterwood	Mb - LH - LH → 0.4 or WG - Bw or Mx	Mb5 Bw2 Md Bw2 Sw1 Sb1 Stkg 0.80 S.C. 2.2



Management Unit - Timiskaming Forest

Period 4

Forest Unit Code	Name	Forest Type	Main Working Group	Site Types	Subsistence Notes	DRP Parameters & Criteria	Additional Information
Bog	Spruce Bog	Conifer	Sb, La	14 11	Clearcut	Sb + La > 0.7 and Pw > 0 and SC > 4.0	1,888 ha Sb8 La2 Skg 0.53 S.C. 4.0
BWP	Birch Pure	Intolerant Hardwood	Bw	3b, 7b 3a, 6a, b, c, 7a	Clearcut	Bw > 0.7 and Po + Bw + Mh + Lh > 0.7	27,778 ha Bw7 Sb1 Po1 Pj1 Skg 0.70 S.C. 2.5
H	Poplar and Birch Mixed	Intolerant Hardwood	Po, Bw	3a, b, 6a, b, c 7a, b, 10	Clearcut	Bw > 0.7 and Po > 0.7 and Po + Bw + Mh + Lh > 0.7	71,884 ha Po4 Bw4 Sb1 Pj1 Skg 0.70 S.C. 2.5
LC1	Lowland Conifer	Conifer	Sb, La, Ce	12, 13 8	Clearcut	Sb + Ce + La > 0.8 and Sb + Ce Mh + Lh + Pw > 0.0 and Pw + Pj > 0.1	26,863 ha Sb5 La3 Ce2 Skg 0.50 S.C. 2.0
MAV1	Poplar and Birch with Jack Pine	Mixedwood	Po, Pj, Bw, Sb, Sw, Bf	3a 3b, 6a, b, c	Clearcut	Conifer dominated by Pj and Pj 0.4 to 0.6 total conifer composition and 0.6 to 0.4 total hardwood composition	47,387 ha Pj3 Po3 Bw2 Sb1 Sw1 Skg 0.60 S.C. 2.1
MAV2	Poplar and Birch with Spruce	Mixedwood	Bw, Po, Sb, Sw, Bf Ce, La, Ma	3b, 6a, b, c 3a, 7a, b, 10	Clearcut	Conifer dominated by Sb, Sw and Bf 0.4 to 0.6 total conifer composition and 0.6 to 0.4 total hardwood composition	96,181 ha Bw3 Sb3 Po2 Sw1 Skg 0.68 S.C. 2.0
OH	Other Hardwoods	Tolerant / lowland Hardwood	Bw, Mh, Ma, By, Po, Pj Ac, Sb, Sw, Ce	10, 15, 16 7a, b	Clearcut	Lh + Mh + Lh > 0.3	15,507 ha Bw3 Lh2 Mh2 Lh1 Sb1 Sw1 Skg 0.80 S.C. 2.7
PJ1	Jack Pine Pure	Conifer	Pj	3a, b 1, 4, 5b	Clearcut	Pj > 0.7 and Po + Bw + Mh + Lh > 0.2	116,448 ha Pj7 Sb1 Po1 Sw1 Skg 1.00 S.C. 1.7
PJ2	Jack Pine Mixed	Conifer	Pj, Sb	4, 5b 1, 2b, 3a, b, 5a, 6b	Clearcut	Pj > 0.5 and all conifer > 0.7 and Bf + Sw + Pw + Ce + La > 0.2 and Pj > Sb or Pj + Sb + Pw > 0.7	41,287 ha Pj6 Sb2 Po1 Sw1 Skg 0.80 S.C. 1.7
POP	Poplar Pure	Intolerant Hardwood	Po	7a, b, 10 6a, b, c	Clearcut	Po > 0.7 and Po + Bw + Mh + Lh > 0.7	85,234 ha Po7 Sb1 Sw1 Pj1 Skg 0.70 S.C. 2.2
PR1	Red Pine Plantations	Conifer	Pi, Pw	3b 2b, 6b	Clearcut	PR WG < 50 yrs or Pj, OC WG but not PWR_H or PWR_L	162 ha Pi6 Pj3 Po1 Skg 0.86 S.C. 1.6
PWR_H	White and Red Pine High Stocking	Conifer	Pw	6b, c, 7b	Shelterwood	Pw + Pi > 0.5 and Pw > Pi and (Pw + Pi) * skg > 0.3 but not PR1	633 ha Pw4 Bw2 Pi1 Sb1 Skg 0.88 S.C. 1.9
PWR_L	White and Red Pine Low Stocking	Conifer Mixedwood	Pw, Bw, Pj, Pi, Sb, By Po, Sw	6c, 3b 7b	Clearcut	Pw + Pi > 0.3 but not PWR_H or PR1	13,340 ha Pw3 Bw2 Sb1 Pi1 Pj1 Sw1 Po1 Skg 0.60 S.C. 1.9
SB1	Lowland Black Spruce	Conifer	Sb	8, 11 9, 12, 13	Clearcut	Sb > 0.8 and Mh + Lh + Pw > 0.0 and Pw + Pj > 0.1	79,807 ha Sb8 La1 Skg 0.50 S.C. 1.6
SF1	Upland Spruce and Fir	Conifer Mixedwood	Sb, Sw, Bf, Ce, La, Po Pj, Bw	6b, 9 3a, b, 6a, c, 7a, b, 10	Clearcut	All conifer > 0.7 and dominated by Sw, Sb & Bf but not PJ2 or SP1	37,481 ha Sb3 Bf2 Sw2 Po2 Bw1 Skg 0.60 S.C. 1.6
SP1	Upland Spruce	Conifer	Sb, Pj, Sw Po, Bf, La	5a, b 1, 3a, b, 4, 6b	Clearcut	All conifer > 0.7 and Bf + Sw + Pw + Ce + La > 0.2 and Sb > Pj but not PJ2	57,814 ha Sb6 Pj2 Bw1 Po1 Skg 0.69 S.C. 1.2

Source: 1991/92 (1991/92) and 1992/93 (1992/93) 1991/92
1992/93 4.11



2009 Independent Forest Audit

Table 2b - DESCRIPTION OF FOREST UNITS (FMP-8)

Management Unit - Watabeag

Period 1

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Pj	Jack Pine	Conifer	WG = Pj	Prime Site (1c) fine to very fine sand and silty loam textured soils. Fresh moisture regime. Pj found in association with spruce and poplar Intermediate Site (2d) Soil ranges from fine to coarse sand. Fresh to dry moisture regime. Deep soils, typically till deposits. Pj can be found in association with spruce, balsam fir, poplar & birch Intermediate Site (2p) Poorly drained wet moisture regime. Deep soils. Pj usually found in association with Sb Intermediate Site (2 sf) (2-shallow fine textured) Minimal soil depth less than 1 metre over bedrock. Dry to fresh moisture regime. Loamy, silty and clay sites Intermediate Site (2n) Dry moisture regime. Shallow mineral soil less than one metre over bedrock. Coarse sands to loamy fine sand Very shallow sites (3 vs) soil depth less than 30 cm over bedrock. Moist and dry moisture regime	Clearcut Clearcut Clearcut Clearcut Clearcut		
Sb	Black Spruce	Conifer	WG = Sb	Prime Site (1f) fine textured soils loams to silts and clays. Fresh moisture regime. Sb found in association with jackpine, balsam fir and poplar Intermediate Site (2p) poorly drained. Less than 40 cm of organic matter. Predominantly Site Class 2 and 3. Sb Intermediate Site (2i) imperfectly drained. Less than 40 cm of organic material. Predominantly Site Class 2. Sb Poor Sites (3o) organic soils greater than 40 cm. Very wet. Sphagnum moss sites characterized by stunted Sb and tamarack. Usually Site Class 3	Clearcut Clearcut Clearcut Clearcut		
Bf	Balsam Fir	Conifer	WG = Bf	All Sites	Clearcut		
OC	Other Conifer	Conifer	WG = OC	May be found on a variety of sites	Clearcut		
Po	Poplar	Intolerant Hardwood	WG = Po	Prime Site (1f to 1e) textures range from coarse sandy to clayey material. Good drainage. Fresh moisture regime. Deep soil Intermediate Site (2d-2e) Moisture regime ranges from dry to wet. Soils range from sands to clays. Predominantly Site Class 2. Po may be in association with Pj or Sp	Clearcut Clearcut		
Hs	White Birch	Intolerant Hardwood	WG = Hs	All Sites	Clearcut		



Period 2

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FDI Parameters & Criteria	Additional Information
Pj	Jack Pine	Conifer	WG - Pj	Site Class X & 1 Prime Site characterized by deep, dry to fresh soils. Usually fine to loamy sands. O.G. 2a - 2b Site Class 2 Dry to fresh and shallow sand to coarse loamy sands. Shrub & herb poor O.G. 1, 2 and 4 Site Class 3 Very shallow dry to fresh sandy to coarse loamy soils. Can have exposed bedrock. Shrub & herb poor O.G. 1	Clearcut		
Sp	Spruce	Conifer	WG - Sp	Site Class X and 1 Fresh to moderately moist soils usually loamy to clay sites O.G. 5a, 5b and 9 Site Class 2 and 3 Soils range from moderately drained fresh sites to very wet organic sites. Usually feather moss moist fine sand O.G. 4 & 8 on upland sites and O.G. 11, 12 & 13 on lower and wetter sites	Clearcut		
OC (H)	Other Conifer	Conifer	WG - OC	Site Class X & 1 Usually fine sand to clay loamy fresh to moderately drained O.G. 6a, 6b and 9	Clearcut		
Po	Poplar	Intolerant Hardwoods	WG - Po	Site Class 2 and 3 O.G. 6a, 6b & 9	Clearcut		
Bw	White Birch	Intolerant Hardwoods	WG - Bw	Site Class X, 1 & 2 O.G. 7a, 7b & 10 Site Class 3 O.G. 7a, 7b Site Class X, 1 & 2 O.G. 6b & 1 Site Class 3 O.G. 6b & 1	Clearcut		

Period 3

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FDI Parameters & Criteria	Additional Information
PjPur	Pure Jack Pine Stands	Conifer	Pj	2b, 2a, 4, 1	Clearcut	Pj - 0.5	1512b Hb Pw Sh1 Hw1 0.87 S.C. 1.4
SpPur	Pure Spruce Stands	Conifer	Sh	5a, 5b, 4, 6, 9, 11, 12, 13	Clearcut	Sh - 0.7	1800f Hb Sh1 Hw1 E.1 0.70 S.C. 1.8
ShLow	Lowland Spruce Stands	Conifer	Sh	13, 12, 11	Clearcut	Sh - 0.4 and Cc - E - 0.3	721 Hb 1.5 Sh4 Cc1 0.64 S.C. 1.4
Pw	Red and White Pine Working Group, and Pw or Pw in Stand Component	Mixed conifer	Pw	6b, 15, 1a, 3a, 3b, 1, 2a, 2b	Clearcut	Wg - Pw, Pw - Pw - 0.3	250 Hb Pw5 Pw2 Sh2 Hw1 0.95 S.C. 0.6
Popur	Pure Poplar Stands	Hardwood	Po	7a, 6a, 6b, 6c, 10, 1b, 3a	Clearcut	Po - 0.5	1870f Hb Pw Sh1 Hw1 0.81 S.C. 2.1
BwPur	Pure white Birch Stands	Hardwood	Bw	6a, 7b, 15, 1b, 7a	Clearcut	Bw - 0.7	714 Hb Hw7 Pw1 Pw1 Sh1 0.81 S.C. 2.1
Mixco	Mixedwood Conifer Dominated Stands	Mixedwood	Sh	9, 6b, 12, 13, 5b, 4, 5a, 8, 2b, 3a, 1b, 11	Clearcut	Sh - Sw - Pj - Bw - 0.5	21718 Hb Sh4 Pw2 Hw1 Pw1 Hw1 L.1 0.70 S.C. 1.6
Mixpo	Mixedwood Poplar Dominated Stands	Mixedwood	Po	6a, 6b, 6c, 7a, 7b, 3a, 1b, 10, 15	Clearcut	Po - Bw - 0.5 and Sh - Sw - Pj - Bw - 0.4 and Po - 0.5	7151 Hb Pw5 Sh2 Hw1 Hw1 Pw1 0.78 S.C. 2.1
Mixbw	Mixedwood White Birch Dominated Stands	Mixedwood	Bw	6a, 6c, 7a, 7b, 10, 1b, 15	Clearcut	Bw - Po - 0.5 and Sh - Sw - Pj - Bw - 0.4 and Bw - Po	7850 Hb Hw5 Pw2 Sh2 Pw1 0.89 S.C. 1.8
Otherm	Larch, Cedar and Other Conifer Working Groups	Other Conifer	Cc	13, 9, 10	Clearcut	Bw - Cc, L, or Cc and Sh or - 0.3	1512 Hb 1.5 Cc2 Sh2 Pw1 0.65 S.C. 1.8
Otherhd	Black Ash, Red Maple, Soft Maple Working Groups	Other Hardwood	Ab	15, 1a	Clearcut	Bw - Ab - Mb - Mh - Mb - Mb - 0.3	187 Hb Hw4 Ab1 Sw1 Hw1 Cc1 0.80 S.C. 2.2



Period 4		Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Forest Unit Code	Name						
Bog	Spruce Bog	Conifer	Sb, La	14 11	Clearcut	Sb + La >= 0.7 and Pw = 0 and SC = 4.0	3,658 Ha. Crown Managed Sb6 La2 Stkg 0.53 S.C. 4.0
BWP	Birch Pure	Intolerant Hardwood	Bw	3b, 7b 3a, 6a, b, c, 7a	Clearcut	Bw >= 0.7 and Po + Bw + Mh + Uh + Lh >= 0.7	27,778 Ha. Crown Managed Bw7 Sb1 Po1 Pj1 Stkg 0.70 S.C. 2.5
IH	Poplar and Birch Mixed	Intolerant Hardwood	Po, Bw	3a, b 6a, b, c 7a, b, 10	Clearcut	Bw < 0.7 and Po < 0.7 and Po + Bw + Mh + Uh + Lh >= 0.7	71,954 Ha. Crown Managed Po4 Bw4 Sb1 Pj1 Stkg 0.70 S.C. 2.5
LC1	Lowland Conifer	Conifer	Sb, La, Ce	12, 13 9	Clearcut	Sb + Ce + La >= 0.8 and Sb < 0.8 Mh + Uh + Pr = 0.0 and Pw + Pj <= 0.1	26,963 Ha. Crown Managed Sb5 La3 Ce2 Stkg 0.50 S.C. 2.0
MW1	Poplar and Birch with Jack Pine	Mixedwood	Po, Pj, Bw, Sb, Sw, Bf	3a, 3b, 6a, b, c	Clearcut	Conifer dominated by Pj and Pr 0.4 to 0.6 total conifer composition and 0.6 to 0.4 total hardwood composition	47,387 Ha. Crown Managed Pj3 Po3 Bw2 Sb1 Sw1 Stkg 0.80 S.C. 2.1
MW2	Poplar and Birch with Spruce	Mixedwood	Bw, Po, Sb, Sw, Bf, Ce, La, Ms	3b, 6a, b, c 3a, 7a, b, 10	Clearcut	Conifer dominated by Sb, Sw and Bf 0.4 to 0.6 total conifer composition and 0.6 to 0.4 total hardwood composition	66,181 Ha. Crown Managed Bw3 Sb3 Po2 Sw1 Bf1 Stkg 0.68 S.C. 2.0
OH	Other Hardwoods	Tolerant / lowland Hardwood	Bw, Mh, Ms, By, Po, Pj, Ax, Sb, Sw, Ce	10, 15, 16 7a, b	Clearcut	Lh + Mh + Uh >= 0.3	15,507 Ha. Crown Managed Bw3 Uh2 Mh2 Lh1 Sw1 Sb1 Stkg 0.80 S.C. 2.7
PJ1	Jack Pine Pure	Conifer	Pj	2a, b 1, 4, 5b	Clearcut	Pj >= 0.7 and Po + Bw + Mh + Uh + Lh <= 0.2	116,446 Ha. Crown Managed Pj7 Sb1 Po1 Bw1 Stkg 1.00 S.C. 1.7
PJ2	Jack Pine Mixed	Conifer	Pj, Sb	4, 5b 1, 2b, 3a, b, 5a, 6b	Clearcut	Pj >= 0.5 and all conifer >= 0.7 and Bf + Sw + Pw + Ce + La <= 0.2 and Pj >= Sb or Pj + Sb + Pr >= 0.7	41,097 Ha. Crown Managed Pj6 Sb2 Po1 Bw1 Stkg 0.80 S.C. 1.7
POP	Poplar Pure	Intolerant Hardwood	Po	7a, b, 10 6a, b, c	Clearcut	Po >= 0.7 and Po + Bw + Mh + Uh + Lh >= 0.7	85,034 Ha. Crown Managed Po7 Bw1 Sb1 Pj1 Stkg 0.70 S.C. 2.2
PR1	Red Pine Plantations	Conifer	Pr, Ps	3b 2b, 6b	Clearcut	PR WG < 50 yrs or PS OC WG but not PWR_H or PWR_L	162 Ha. Crown Managed Pr6 Pj3 Po1 Stkg 0.66 S.C. 1.6
PWR_H	White and Red Pine High Stocking	Conifer	Pw	6b, c, 7b	Shelterwood	Pw + Pr >= 0.5 and Pw > Pr and (Pw + Pr) * stkg > 0.3 but not PR1	633 Ha. Crown Managed Pw6 Bw2 Pr1 Sb1 Stkg 0.69 S.C. 1.9
PWR_L	White and Red Pine Low Stocking	Conifer Mixedwood	Pw, Bw, Pj, Pr, Sb, By, Po, Sw	6c, 3b 7b	Clearcut	Pw + Pr > 0.3 but not PWR_H or PR1	3,340 Ha. Crown Managed Pw3 Bw2 Sb1 Pr1 Pj1 Sw1 Po1 Stkg 0.60 S.C. 1.9
SB1	Lowland Black Spruce	Conifer	Sb	6, 11 9, 12, 13	Clearcut	Sb >= 0.8 and Mh + Uh + Pr = 0.0 and Pw + Pj <= 0.1	79,907 Ha. Crown Managed Sb9 La1 Stkg 0.50 S.C. 1.6
SF1	Upland Spruce and Fir	Conifer Mixedwood	Sb, Sw, Bf, Ce, La, Po, Pj, Bw	6b, 9 3a, b, 6a, c, 7a, b, 10	Clearcut	All conifer >= 0.7 and dominated by Sw, Sb & Bf but not PJ2 or SP1	37,491 Ha. Crown Managed Sb3 Bf2 Sw2 Po2 Bw1 Stkg 0.60 S.C. 1.4
SP1	Upland Spruce	Conifer	Sb, Pj, Sw, Po, Bf, La	5a, b 1, 3a, b, 4, 6b	Clearcut	All conifer >= 0.7 and Bf + Sw + Pw + Ce + La <= 0.2 and Sb >= Pj but not PJ2	57,014 Ha. Crown Managed Sb6 Pj2 Bw1 Po1 Stkg 0.69 S.C. 1.2

Source: FMPM (1996) FMP-B and/or FMPM (2004) FMP-3
TMPM Table - 4.11



2009 Independent Forest Audit

Table 2c - DESCRIPTION OF FOREST UNITS (FMP-8)

Management Unit - Timiskaming

Period 1

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Pj	Jack Pine	Conifer	Pj	Prime Sites (1c, 1f) sand, silt and clay loams Intermediate Sites (2d, 2e) dry and shallow sands Intermediate Sites (2p, 2f) shallow soils or poorly drained Poorer Sites "Non-Prime" (3e) very shallow soils	Clearcut Clearcut Clearcut Clearcut		
Sb	Black Spruce	Conifer	Sb	Prime Site* (1f) Soils with less than 40 cm organic matter Intermediate Site (2e, 2p) Wet soils with less than 40 cm organic matter "Non-Prime" poor sites (3e) Wet with an organic matter depth greater than 40 cm	Clearcut Clearcut Clearcut		
Bf	Balsam Fir	Conifer	Bf	All Sites	Clearcut		
OC	Other Conifer	Conifer	OC	All Sites	Clearcut		
Po	Poplar	Intolerant Hardwood	Po	All sites concentrate stand conversion on Prime Sites* (1c, 1f) Coarse loams to silt or clay loams	Clearcut		
Bw	White Birch	Intolerant Hardwood	Bw	All Sites Concentrate stand conversions on Prime Sites (1c, 1f) Coarse loams to fine loams	Clearcut		



Period 2

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Pw	White Pine	Conifer	WG - Pw	Deep Glacial till, fine to coarse sandy terraces. S.C. X, 1	Shelterwood 4-coup system may be applied where feasible		
				Shallow fine or coarse sands on granitic ridges S.C. 2, 3	Shelterwood 4-coup system may be applied where feasible		
				Deep Glacial till, fine to coarse sandy terraces. S.C. X, 1	Clearcut		
				Shallow fine or coarse sands on granitic ridges. S.C. 2, 3	Clearcut		
Pr	Red Pine	Conifer	WG - Pr	Deep Glacial till, coarse sandy terraces S.C. X, 1	Clearcut		
				Moderately deep to deep coarse sands S.C. 2	Clearcut		
				Shallow sands on ridges S.C. 2, 3	Clearcut		
Pj	Jack Pine	Conifer	WG - Pj	Prime Sites (1c, 1f) sand, silt and clay loams. Dry to fresh sites with deep soils usually S.C. X, and 1 O.G. 2a - 2b.	Clearcut		
				Intermediate Sites (2d, 2a) dry and shallow sands to coarse loamy sands. Usually S.C. 2. Shrub and herb poor. O.G. 1	Clearcut		
				Intermediate Site (2p, 2af) shallow soils or poorly drained. S.C. 2 Shrub and herb poor. O.G. 1	Clearcut		
				Poorer Sites "Non-Prime" (3a) very shallow dry to fresh, sandy to coarse loamy soils. Usually S.C. 3 Shrub and herb poor. O.G. 1	Clearcut		
Sp	Spruce	Conifer	WG - Sp	"Prime Site" (1f) soils with less than 40 cm organic matter. Fresh to moder- ately moist fine loamy to clayey soils. Feather moss. Herb and shrub poor. S.C. X, 1 O.G. 5a	Clearcut		
				Intermediate site (2s, 2p) Wet soils with less than 40 cm organic matter. Feather moss or sphagnum on moist, level sites. Shrub and herb poor. S.C. X, 1 & 2 O.G. 8 and 13	Clearcut		
				"Non-Prime" Poor Sites (3a) Wet with an organic matter depth greater than 40 cm. Organic sites with thick or thin well to moder- ately well decomposed surface fibric horizon. Alder and labrador tea are commonly present. S.C. 2, 3 O.G. 11 - 13	Clearcut		
Bf	Balsam Fir	Conifer	WG - Bf	All sites O.G. 6	Clearcut		
OC	Other Conifer	Conifer	WG - OC	All Sites. Cc O.G. 9 and 13 L. O.G. 11	Clearcut		
Po	Poplar	Intolerant Hardwoods	WG - Po	Prime Sites (1c, 1f) Coarse loams to silt or clay loams. Herb and shrub rich. S.C. X, 1 & 2 O.G. 7a - 7b	Clearcut (winter)		
				Intermediate to poor sites Deep, moist medium to fine textured soils. Stands may be converted to Sp or Pj S.C. 3 O.G. 6a, 6b	Clearcut (winter)		
Bw	White Birch	Intolerant Hardwoods	WG - Bw	All Sites Concentrate stand conversion on Prime Sites (1c, 1f) Coarse loams to fine loams	Clearcut		



Period 3

Forest Unit	Code	Name	Forest Type	Main Working Group	Site Type(s)	Subcultural System	FRI Parameters & Criteria	Additional Information
Typar	1	Jackpine Pure	Conifer	WG = Pj	1, 2a, 2b	Clearcut		
Sbpur	2	Black Spruce Pure	Conifer	WG = Sb	5a, 5b, 8, 11, 12, 13, 14, 7a, 7b, 10 9, 6a-c, 3ab	Clearcut		
Popur	3	Poplar Pure	Intolerant Hardwoods	WG = Po	7a, 7b, 10	Clearcut		
Bospur	4	White Birch Pure	Intolerant Hardwoods	WG = Bw	7a, 10, 15	Clearcut		
Mixpo	5	Mixed Poplar	Intolerant Hardwoods	WG = Po	3a, 3b, 4, 6a-c, 7a, 7b	Clearcut		
Mixbs	6	Mixed White Birch	Intolerant Hardwoods	WG = Bw	15, 7a, 7b, 6a, 6b, 3a, 3b	Clearcut		
Mixco	7	Mixed Conifer	Conifer	WG = Pj	1, 2b, 3a, 3b, 4, 5a, 5b, 6a, 6b, 8, 9	Clearcut		
Sblow	8	Lowland Black Spruce	Conifer	WG = Sb	12, 13, 14	Clearcut		
Ocon	9	Other Conifer	Conifer	WG = OC	13, 14, 14	Clearcut		
Pwr	10	White & Red Pine	Conifer	WG = Pw, Pr	15, 16. May include mixedwood Site Type Complex	Shelterwood		
Tolhd	11	Tolerant Hardwoods	Tolerant Hardwoods	WG = Oh	15, 16	Shelterwood		

Period 4

Forest Unit	Code	Name	Forest Type	Main Working Group	Site Type(s)	Subcultural System	FRI Parameters & Criteria	Additional Information
Bog		Spruce Bog	Conifer	Sb, La	11	Clearcut	Sb + La >= 0.7 and Pw = 0 and SC = 4.0	5,888 Ha Sb8 La2 Stkg 0.53 Crown Managed S.C. 4.0
BWP		Birch Pure	Intolerant Hardwood	Bw	3b, 7b 3a, 6a,b,c, 7a	Clearcut	Bw >= 0.7 and Po + Bw + Mh + Uh + Lh >= 0.7	27,778 Ha Bw7 Sb1 Po1 Pt1 Stkg 0.70 Crown Managed S.C. 2.5
IH		Poplar and Birch Mixed	Intolerant Hardwood	Po, Bw	3a,b 6a,b,c 7a,b, 10	Clearcut	Bw < 0.7 and Po < 0.7 and Po + Bw + Mh + Uh + Lh >= 0.7	71,954 Ha Po4 Bw4 Sb1 Pt1 Stkg 0.70 Crown Managed S.C. 2.5
LC1		Lowland Conifer	Conifer	Sb, La, Ce	12, 13 8	Clearcut	Sb + Ce + La >= 0.8 and Sb < 0.8 Mh + Uh + Pr < 0.0 and Pw + Pj <= 0.1	26,963 Ha Sb5 La3 Ce2 Stkg 0.50 Crown Managed S.C. 2.0
MW1		Poplar and Birch with Jack Pine	Mixedwood	Po, Pj, Bw, Sb, Sw, Bf	3a, 3b, 6a,b,c	Clearcut	Conifer dominated by Pj and Pj 0.4 to 0.6 total conifer composition and 0.6 to 0.4 total hardwood composition	47,387 Ha Pj3 Po3 Bw2 Sb1 Sw1 Stkg 0.80 Crown Managed S.C. 2.1
MW2		Poplar and Birch with Spruce	Mixedwood	Bw, Po, Sb, Sw, Bf, Ce, La, Ms	3b, 6a,b,c 3a, 7a,b, 10	Clearcut	Conifer dominated by Sb, Sw and Bf 0.4 to 0.6 total conifer composition and 0.6 to 0.4 total hardwood composition	86,181 Ha Bw3 Sb3 Po2 Sw1 Bf1 Stkg 0.88 Crown Managed S.C. 2.0
OH		Other Hardwoods	Tolerant / lowland Hardwood	Bw, Mh, Ms, By, Po, Pj, Ax, Sb, Sw, Ce	10, 15, 16 7a,b	Clearcut	Lh + Mh + Uh >= 0.3	15,507 Ha Bw3 Uh2 Mh2 Lh1 Sw1 Sb1 Stkg 0.80 Crown Managed S.C. 2.7
PJ1		Jack Pine Pure	Conifer	Pj	2a,b 1, 4, 5b	Clearcut	Pj >= 0.7 and Po + Bw + Mh + Uh + Lh <= 0.2	116,446 Ha Pj7 Sb1 Po1 Bw1 Stkg 1.00 Crown Managed S.C. 1.7
PJ2		Jack Pine Mixed	Conifer	Pj, Sb	4, 5b 1, 2b, 3a,b, 5a, 6b	Clearcut	Pj >= 0.5 and all conifer >= 0.7 and Bf + Sw + Pw + Ce + La <= 0.2 and Pj >= Sb or Pj + Sb + Pr >= 0.7	41,097 Ha Pj6 Sb2 Po1 Bw1 Stkg 0.80 Crown Managed S.C. 1.7
POP		Poplar Pure	Intolerant Hardwood	Po	7a,b, 10 6a,b,c	Clearcut	Po >= 0.7 and Po + Bw + Mh + Uh + Lh >= 0.7	85,034 Ha Po7 Bw1 Sb1 Pt1 Stkg 0.70 Crown Managed S.C. 2.2
PR1		Red Pine Plantations	Conifer	Pr, Ps	5b 2b, 6b	Clearcut	PR WG < 50 yrs or PS, OC WG but not PWR_H or PWR_L	162 Ha Pr6 Pj3 Po1 Stkg 0.86 Crown Managed S.C. 1.6
PWR_H		White and Red Pine High Stocking	Conifer	Pw	6b,c, 7b	Shelterwood	Pw + Pr >= 0.5 and Pw > Pr and (Pw + Pr) * stkg > 0.3 but not PR1	633 Ha Pw6 Bw2 Pr1 Sb1 Stkg 0.89 Crown Managed S.C. 1.9
PWR_L		White and Red Pine Low Stocking	Conifer Mixedwood	Pw, Bw, Pj, Pr, Sb, By, Po, Sw	6c, 3b 7b	Clearcut	Pw + Pr > 0.3 but not PWR_H or PR1	3,340 Ha Pw3 Bw2 Sb1 Pr1 Pj1 Sw1 Po1 Stkg 0.60 Crown Managed S.C. 1.9
SB1		Lowland Black Spruce	Conifer	Sb	8, 11 9, 12, 13	Clearcut	Sb >= 0.8 and Mh + Uh + Pr < 0.0 and Pw + Pj <= 0.1	79,907 Ha Sb9 La1 Stkg 0.50 Crown Managed S.C. 1.6
SF1		Upland Spruce and Fir	Conifer Mixedwood	Sb, Sw, Bf, Ce, La, Po, Pj, Bw	6b, 9 3a,b, 6a,c, 7a,b, 10	Clearcut	All conifer >= 0.7 and dominated by Sw, Sb & Bf but not PJ2 or SP1	37,481 Ha Sb3 Bf2 Sw2 Po2 Bw1 Stkg 0.60 Crown Managed S.C. 1.4
SP1		Upland Spruce	Conifer	Sb, Pj, Sw, Po, Bf, La	5a,b 1, 3a,b, 4, 6b	Clearcut	All conifer >= 0.7 and Bf + Sw + Pw + Ce + La <= 0.2 and Sb >= Pj but not PJ2	57,914 Ha Sb6 Pj2 Bw1 Po1 Stkg 0.69 Crown Managed S.C. 1.2

Sources: FMP (1995) FMP 5 and FMP (2004) FMP 3
FMP Table 4-11



Table 2d - DESCRIPTION OF FOREST UNITS (FMP-8)
Management Unit - Pionaki

[illegible]

Period 2

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Subcultural System	FRI Parameters & Criteria	Additional Information
Pj	Jack Pine	Conifer	WG - Pj	Prime Sites 1c & 1f (sand, silt and clay loams): Dry to fresh sites with deep soils usually SC X, 1 O.G. 2a, 2b Most common moisture regime of 0 - 2 Moderately dry to fresh	Clearcut		
				Prime Sites 1c & 1f (sand, silt and clay loams): Dry to fresh sites with deep soils usually SC X, 1 O.G. 2a, 2b Most common moisture regime of 0 - 2 Moderately dry to fresh	Clearcut		
				Intermediate Sites 2d, 2e, 2p and 2q (dry and shallow sands to coarse loamy sands): Usually SC2, O.G. 1 Shrub and herb poor	Clearcut		
				Poorer sites "Non-Prime" (1c) very shallow dry to fresh, sandy to coarse loamy soils Usually SC4, O.G. 1 Shrub and herb poor	Clearcut		
Sp	Spruce	Conifer	WG - Sp	Prime Sites 1f (sands with less than 40 cm organic matter): Fresh to moderately moist fine loamy to clayey soils SC X, 1 O.G. 5a Feather moss Herb and shrub poor	Clearcut		
				Intermediate Sites 2i & 2p (wet soils with less than 40 cm organic matter): SC X, 1 and 2 O.G. 8 and 13 Feather or sphagnum moss on moist level sites	Clearcut		
				Non-Prime, poor sites (5c) Wet with an organic matter depth greater than 40 cm. Organic sites with thick or thin, well to moderately decomposed surface fibric horizon Alder and Labrador tea are commonly present SC 2, 3 O.G. 11 - 13	Clearcut		
Bf	Balsam Fir	Conifer	WG - Bf	All Sites O.G. 6	Clearcut		
Po	Poplar	Intolerant Hardwood	WG - Po	Prime Sites 1c & 1f Coarse loams to silt or clay loams SC X, 1 & 2 O.G. 7a - 7b Herb and shrub rich	Clearcut		
				Intermediate to poor sites Deep moist, medium to fine textured soils SC 3 O.G. 7a - b, 10 Some stands may have been converted to Sp or Pj	Clearcut		
Bw	White Birch	Intolerant Hardwood	WG - Bw	All Sites Coarse loams to fine sands	Clearcut		

Period 3

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Subcultural System	FRI Parameters & Criteria	Additional Information
Pypur	1 Jackpine Pure	Conifer	Pj	1, 2a, 2b	Clearcut	PjBf(1)Sh1	
Shpur	2 Black Spruce Pure	Conifer	Sh	5a, 5b, 8, 11, 12, 13, 14, 7a, 7b, 10, 9, 6a-c, 3ab	Clearcut	ShBf(1)Bw(1)	
Pypur	3 Poplar Pure	Intolerant Hardwood	Po	7a, 7b, 10	Clearcut	PoBfBw(1)Pj(1)	
Bwpur	4 White Birch Pure	Intolerant Hardwood	Bw	7a, 10, 15	Clearcut	Bw(7)Po(1)Sh(1)	
Mixpo	5 Mixed Poplar	Intolerant Hardwood	Po	3a, 3b, 4, 6a-c, 7a, 7b	Clearcut	Po(Bw2)Pj(1)Sh(1)Bw(1)	
Mixbw	6 Mixed White Birch	Intolerant Hardwood	Bw	15, 7a, 7b, 6a, 6b, 3a, 3b	Clearcut	Bw4Po2Sh2Bw(1)Pj(1)	
Mixco	7 Mixed Conifer	Conifer	Sh	1, 2b, 3a, 3b, 4, 5a, 5b, 6a, 6b, 8, 9	Clearcut	Sh(1)Pj(2)Bw(1)Sh(1)Bf(1)	
Shbw	8 Leland Black Spruce	Conifer	Sh	12, 13, 14	Clearcut	ShBf(1)C(e)	
Okom	9 Other Conifer	Conifer	L	13, 14, 14	Clearcut	L(c)C(e)Sh(2)	
Pur	10 White & Red Pine	Conifer	Pw, Pj	15, 16 May include mixedwood Site Type complex	Shelterwood	Pw(1)Pj(1)Sh(1)Pj(1)Bw(1)	
TotbL	11 Tolerant Hardwoods	Tolerant Hardwoods	Lb	15, 16	Shelterwood	Lb4Po(1)Bw(2)Pw(2)Sh(1)	



Forest Unit		Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
Bog	Spruce Bog	Conifer	Sb, La	14 11	Clearcut	Sb + La >= 0.7 and Pw = 0 and SC = 4.0	3,895 Ha. Crown Managed Sb5 La2 Stkg 0.53 S.C. 4.0
BWP	Birch Pure	Intolerant Hardwood	Bw	3b, 7b 3a, 6a,b,c, 7a	Clearcut	Bw >= 0.7 and Po + Bw + Mh + Uh + Lh >= 0.7	27,778 Ha. Crown Managed Bw7 Sb1 Po1 Pj1 Stkg 0.70 S.C. 2.5
IH	Poplar and Birch Mixed	Intolerant Hardwood	Po, Bw	3a,b 6a,b,c 7a,b, 10	Clearcut	Bw < 0.7 and Po < 0.7 and Po + Bw + Mh + Uh + Lh >= 0.7	71,954 Ha. Crown Managed Po4 Bw4 Sb1 Pj1 Stkg 0.70 S.C. 2.5
LC1	Lowland Conifer	Conifer	Sb, La, Ce	12, 13 9	Clearcut	Sb + Ce + La >= 0.8 and Sb < 0.8 Mh + Uh + Pr = 0.0 and Pw + Pj <= 0.1	26,963 Ha. Crown Managed Sb5 La3 Ce2 Stkg 0.50 S.C. 2.0
MW1	Poplar and Birch with Jack Pine	Mixedwood	Po, Pj, Bw, Sb, Sw, Bf	3a, 3b, 6a,b,c	Clearcut	Conifer dominated by Pj and Pr 0.4 to 0.6 total conifer composition and 0.6 to 0.4 total hardwood composition	47,387 Ha. Crown Managed Pj3 Po3 Bw2 Sb1 Sw1 Stkg 0.80 S.C. 2.1
MW2	Poplar and Birch with Spruce	Mixedwood	Bw, Po, Sb, Sw, Bf, Ce, La, Ms	3b, 6a,b,c 3a, 7a,b, 10	Clearcut	Conifer dominated by Sb, Sw and Bf 0.4 to 0.6 total conifer composition and 0.6 to 0.4 total hardwood composition	86,181 Ha. Crown Managed Bw3 Sb3 Po2 Sw1 Bf1 Stkg 0.88 S.C. 2.0
OH	Other Hardwoods	Tolerant / lowland Hardwood	Bw, Mh, Ms, By, Po, Pj, Ax, Sb, Sw, Ce	10, 15, 16 7a,b	Clearcut	Lh + Mh + Uh >= 0.3	15,507 Ha. Crown Managed Bw3 Lh2 Mh2 Lh1 Sw1 Sb1 Stkg 0.80 S.C. 2.7
PJ1	Jack Pine Pure	Conifer	Pj	2a,b 1, 4, 5b	Clearcut	Pj >= 0.7 and Po + Bw + Mh + Uh + Lh <= 0.2	116,446 Ha. Crown Managed Pj7 Sb1 Po1 Bw1 Stkg 1.00 S.C. 1.7
PJ2	Jack Pine Mixed	Conifer	Pj, Sb	4, 5b 1, 2b, 3a,b, 5a, 6b	Clearcut	Pj >= 0.5 and all conifer >= 0.7 and Bf + Sw + Pw + Ce + La <= 0.2 and Pj >= Sb or Pj + Sb + Pr >= 0.7	41,097 Ha. Crown Managed Pj6 Sb2 Po1 Bw1 Stkg 0.80 S.C. 1.7
POP	Poplar Pure	Intolerant Hardwood	Po	7a,b, 10 6a,b,c	Clearcut	Po >= 0.7 and Po + Bw + Mh + Uh + Lh >= 0.7	85,034 Ha. Crown Managed Po7 Bw1 Sb1 Pj1 Stkg 0.70 S.C. 2.2
PR1	Red Pine Plantations	Conifer	Pr, Ps	3b 2b, 6b	Clearcut	PR WG < 50 yrs or PS, OC WG but not PWR_H or PWR_L	162 Ha. Crown Managed Pr6 Pj3 Po1 Stkg 0.86 S.C. 1.6
PWR_H	White and Red Pine High Stocking	Conifer	Pw	6b,c, 7b	Shelterwood	Pw + Pr >= 0.5 and Pw > Pr and (Pw + Pr) * stkg > 0.3 but not PR1	633 Ha. Crown Managed Pw6 Bw2 Pr1 Sb1 Stkg 0.99 S.C. 1.9
PWR_L	White and Red Pine Low Stocking	Conifer Mixedwood	Pw, Bw, Pj, Pr, Sb, By, Po, Sw	6c, 3b 7b	Clearcut	Pw + Pr > 0.3 but not PWR_H or PR1	3,340 Ha. Crown Managed Pw3 Bw2 Sb1 Pr1 Pj1 Sw1 Po1 Stkg 0.80 S.C. 1.9
SB1	Lowland Black Spruce	Conifer	Sb	8, 11 9, 12, 13	Clearcut	Sb >= 0.8 and Mh + Uh + Pr = 0.0 and Pw + Pj <= 0.1	79,907 Ha. Crown Managed Sb1 La1 Stkg 0.50 S.C. 1.6
SF1	Upland Spruce and Fir	Conifer Mixedwood	Sb, Sw, Bf, Ce, La, Po, Pj, Bw	6b, 9 3a,b, 6a,c, 7a,b, 10	Clearcut	All conifer >= 0.7 and dominated by Sw, Sb & Bf but not PJ2 or SP1	37,491 Ha. Crown Managed Sb3 Bf2 Sw2 Po2 Bw1 Stkg 0.80 S.C. 1.4
SP1	Upland Spruce	Conifer	Sb, Pj, Sw, Po, Bf, La	5a,b 1, 3a,b, 4, 6b	Clearcut	All conifer >= 0.7 and Bf + Sw + Pw + Ce + La <= 0.2 and Sb >= Pj but not PJ2	57,914 Ha. Crown Managed Sb6 Pj2 Bw1 Po1 Stkg 0.89 S.C. 1.2

Source: FMFM (1995) FMF 8 and/or FMFM (2004) FMF 3
FMFM Table - 4.11



2009 Independent Forest Audit

Table 2e - DESCRIPTION OF FOREST UNITS (FMP-8)

Management Unit - ShiningTree Forest

Period 1

Forest Unit		Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
PjNR1	Jack Pine	Pj WG stands	pj	na	Clearcut	ng = pj & sc = X or 1	Rotation age = 70
PjR3	Jack Pine	Pj WG stands	pj	na	Clearcut	ng = pj & sc = 2 or 3	Rotation age = 75
Sp	Spruce	Sp WG stands	sh,sw	na	Clearcut	ng = sh or sw	Rotation age = 100
Po	Poplar	Po WG stands	po	na	Clearcut	ng = po	Rotation age = 60
Bw	White Birch	Bw WG stands	bw	na	Clearcut	ng = bw	Rotation age = 80
	White Pine WG		pw	na	ShelterW, Clearcut	ng = pw	
	Red Pine WG		pr	na	ShelterW, Clearcut	ng = pr	
	Balsam Fir WG		bf	na	Clearcut	ng = bf	
	Cedar WG		ce	na	Clearcut	ng = ce	
	Larch WG		la	na	Clearcut	ng = la	
	Other Conifer WG		oc	na	Clearcut	ng = oc	
	Black Ash WG		ab	na	Clearcut	ng = ab	
	Hard Maple WG		mh	na	Clearcut, SeedTree	ng = mh	
	Soft Maple WG		ms	na	Clearcut	ng = ms or g = ms or g = ms	
	Yellow Birch WG		by	na	Clearcut, SeedTree	ng = by	

Period 2 & Period 3

Forest Unit		Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
PW PR	White and Red Pine	white and red pine stands	pw, pr, bw	na	ShelterW, SeedTree	ng = pr > 40%	Rotation age = 100
Pj	Jack Pine	jack pine dominated conifer stands	pj	na	Clearcut	ng = pj and conifer > 70%	Rotation age = 70
SB	Black Spruce	black spruce dominated conifer stands	sb	na	Clearcut	ng = sb and conifer > 70%	Rotation age = 100
PO	Poplar	poplar dominated hardwood stands	po	na	Clearcut	ng = po and hardwood > 70%	Rotation age = 60
BW	White Birch	white birch dominated hardwood stands	bw	na	Clearcut	ng = bw and hardwood > 70%	Rotation age = 70
OC	Other Conifer	cedar or larch stands - typically lowland	ce	na	Clearcut	ng = ce or g = la	Rotation age = 80
OH	Other Hardwood	maple, yellow birch, ash, etc	mh, by, ms	na	Clearcut, ShelterW, SeedTree	ng = mh or g = ms or g = ab	Rotation age = 90
MW	Mixedwood	mixed species stands: hardwood = conifer	bw, po, pj, sp, bf	na	Clearcut	(hardwood > 60% and conifer > 40%)	Rotation age = 75



Period 4		Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Forest Unit Code	Name						
PR1	RED PINE	Conifer	Red Pine - 100%	ES - 19	Clearcut	$pr > 0.7$	Pr10.219ha.SC 1.5dk 0.7
PW1	PW MIXCON	Conifer	White Pine - 93% White Birch - 7%	ES-19 20,21	Shelterwood OR Clearcut	$pw+pr+sw+hc > 0.4$ and $pw > 0.3$	Pw55Sw1Ce1Bf1Bw1Po1 748 ha.SC 2.5dk 0.54
PRW	Pr & PW	Conifer	Red Pine - 100%	ES - 19	Shelterwood OR	$pw+pr > 0.4$	Pr45Bb3Pj1Bf1La1
TH1	TOL HWDS	Hardwood	Hard Maple - 50% White Birch - 26% Yellow Birch - 12% Soft Maple - 9%	ES - 17,15,16 9r,1r,3,20,6c, 13r,7m	Shelterwood	$lh+mh+uh > 0.3$	Mh4Bw3By1Ms1Sw1 9,961 ha.SC 2.6,5dk 0.83
SB1	SB LOWLND	Conifer	Black Spruce - 100%	ES - 8,4,11,14, 13r,5m,6c,12	Clearcut	$sb > 0.8$ and $mh+uh+pr > 0.0$ and $pw+py < 0.1$	Sb9Bf1 13,387ha.SC 1.5,5dk 0.65
PJ1	JACK PINE	Conifer	Jack Pine - 100%	ES - 2,4,1p	Clearcut	$py > 0.7$ and $po+bs+mh+uh < 0.2$	Pj9Po1 44,361 ha .SC 1.7,5dk 0.94
LC1	LOWLND CON	Conifer	Black Spruce - 57% Cedar - 38% Larch - 5%	ES - 13r,9r,14, 12,8,4,6c,5m	Clearcut	$(ce+la+sb > 0.8$ and $mh+uh+pr > 0.0$ and $pw+py < 0.1)$	Sb5Ce4La1 10,602 ha .SC2 1.5dk 0.65
PJ2	PJ MIXCON	Conifer	Jack Pine - 99% Black Spruce 1%	ES - 4,3,6c,13r	Clearcut	$(py+sb+pr > 0.7$ or $(py > 0.5$ and $py+sb+bf+sw+hc+pw+pr+ce+la > 0.7$ and $bf+sw+hc+pw+ce+la < 0.2)$ and $py > sb$	Pj6Sb1Bf1Bw1Po1 15,586 ha .SC1 8,5dk 0.86
SP1	SB MIXCON	Conifer	Jack Pine - 13% Poplar - 1% Black Spruce - 86%	ES - 4,8,6c,3, 5m,6,9r,14 13r,12	Clearcut	$sb+sw+bf+ce+la+pw+py+pr+hc > 0.7$ and $(bf+ce+pw+la+sw+hc < 0.2$ or $py > 0.3)$	Sb6Pj2Bw1Po1 14,225 ha .SC 1.3,5dk 0.66
SF1	SPRU FIR CEDR	Conifer	Black Spruce - 50% Balsam Fir - 17% Cedar - 16% White Spruce 15%	ES - 9r,6c,6m, 13r,14,3,7m,1r, 9p,12,8,5m	Clearcut	$sb+sw+bf+ce+la+pw+py+pr+hc > 0.7$	Sb3Bf5Sw1Ce1Bw1Po1 14,880 ha .SC 1.2,5dk 0.64
PO1	POPLAR	Hardwood	Poplar - 100%	ES 7c,7m,6c, 1r,19	Clearcut	$po+bs+mh+uh+lh > 0.7$ and $po > 0.5$	Po7Bw1Sb1Py1 30,355 ha .SC2 1.5dk 0.89
BW1	BW HARDWOOD	Hardwood	White Birch - 94% Poplar - 6%	ES - 3,7m,7c, 6c,1r,6m,19	Clearcut	$po+bs+mh+uh+lh > 0.7$	Bw6Po2PySw1 32,950 ha .SC 2.3,5dk 0.83
MW1	MXDWD DRY	Mixedwood	Jack Pine - 46% White Birch - 31% Poplar - 22%	ES - 3,6c,4,7m	Clearcut	$py+pr > 0.2$	Pj4Bw3Po2Sb1 17,790 ha .SC 2.1,5dk 0.84
MW2	MXDWD MOIST	Mixedwood	White Birch - 68% Poplar - 16% Black Spruce - 8% White Spruce - 4%	ES - 3,7c,7m, 9r,6c,1r,19,10	Clearcut	$fu = "..."$	Bw4Po1Bf2Sb1Sw1Ce1 21,953 ha .SC 2.1,5dk 0.72

Source: FMFM (1986) FMP-8 and/or FMFM (2004) FMP-3
TMFM Table - 4.11



2009 Independent Forest Audit

Table 2f - DESCRIPTION OF FOREST UNITS (FMP-8)

Management Unit - Timiskaming Forest

Period 4

Forest Unit Code	Name	Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Bog	Spruce Bog	Conifer	Sb, La	14 11	Clearcut	Sb + La >= 0.7 and Pw = 0 and SC = 4.0	3,898 Ha Crown Managed Sb8 La2 Stkg 0.53 SC 4.0
BWP	Birch Pure	Intolerant Hardwood	Bw	3b, 7b 3a, 6a.b.c, 7a	Clearcut	Bw >= 0.7 and Po + Bw + Mh + Uh + Lh >= 0	27,778 Ha Crown Managed Bw7 Sb1 Po1 Pj1 Stkg 0.70 SC 2.5
IH	Poplar and Birch Mixed	Intolerant Hardwood	Po, Bw	3a, b 6a.b.c 7a.b, 10	Clearcut	Bw < 0.7 and Po < 0.7 and Po + Bw + Mh + Uh + Lh >= 0	71,954 Ha Crown Managed Po4 Bw4 Sb1 Pj1 Stkg 0.70 SC 2.5
LC1	Lowland Conifer	Conifer	Sb, La, Ce	12, 13 9	Clearcut	Sb + Ce + La >= 0.8 and Sb Mh + Uh + Pr = 0.0 and Pw + Pj <= 0.1	26,963 Ha Crown Managed Sb5 La3 Ce2 Stkg 0.50 SC 2.0
MW1	Poplar and Birch with Jack Pine	Mixedwood	Po, Pj, Bw, Sb, Sw, Bf	3a, 3b, 6a.b.c	Clearcut	Conifer dominated by Pj and 0.4 to 0.6 total conifer compo 0.6 to 0.4 total hardwood compo	47,387 Ha Crown Managed Pj3 Po3 Bw2 Sb1 Sw1 Stkg 0.80 SC 2.1
MW2	Poplar and Birch with Spruce	Mixedwood	Bw, Po, Sb, Sw, Bf, Ce, La, Ms	3b, 6a.b.c 3a, 7a.b, 10	Clearcut	Conifer dominated by Sb, Sw 0.4 to 0.6 total conifer compo 0.6 to 0.4 total hardwood compo	66,161 Ha Crown Managed Bw3 Sb3 Po2 Sw1 Bf1 Stkg 0.68 SC 2.0
OH	Other Hardwoods	Tolerant / lowland Hardwood	Bw, Mh, Ms, By, Po, Pj, Ax, Sb, Sw, Ce	10, 15, 16 7a.b	Clearcut	Lh + Mh + Uh >= 0.3	15,507 Ha Crown Managed Bw3 Uh2 Mh2 Lh1 Sw1 Sb1 Stkg 0.80 SC 2.7
PJ1	Jack Pine Pure	Conifer	Pj	2a.b 1, 4, 5b	Clearcut	Pj >= 0.7 and Po + Bw + Mh + Uh + Lh <= 0	118,446 Ha Crown Managed Pj7 Sb1 Po1 Bw1 Stkg 1.00 SC 1.7
PJ2	Jack Pine Mixed	Conifer	Pj, Sb	4, 5b 1, 2b, 3a.b, 5a, 6b	Clearcut	Pj >= 0.5 and all conifer >= 0 Bf + Sw + Pw + Ce + La <= 0 Pj >= Sb or Pj + Sb + Pr >= 0	41,097 Ha Crown Managed Pj6 Sb2 Po1 Bw1 Stkg 0.80 SC 1.7
POP	Poplar Pure	Intolerant Hardwood	Po	7a.b, 10 6a.b.c	Clearcut	Po >= 0.7 and Po + Bw + Mh + Uh + Lh >= 0	65,034 Ha Crown Managed Po7 Bw1 Sb1 Pj1 Stkg 0.70 SC 2.2
PR1	Red Pine Plantations	Conifer	Pr, Ps	3b 2b, 6b	Clearcut	PR WtG < 50 yrs or PS, OC V but not PWR_H or PWR_L	162 Ha Crown Managed Pr6 Pj3 Po1 Stkg 0.86 SC 1.6
PWR_H	White and Red Pine High Stocking	Conifer	Pw	6b.c, 7b	Shelterwood	Pw + Pr >= 0.5 and Pw > Pr (Pw + Pr) * stkg > 0.3 but not Stkg 0.69	633 Ha Crown Managed Pw6 Bw2 Pr1 Sb1 Stkg 0.69 SC 1.9
PWR_L	White and Red Pine Low Stocking	Conifer Mixedwood	Pw, Bw, Pj, Pr, Sb, By, Po, Sw	6c, 3b 7b	Clearcut	Pw + Pr > 0.3 but not PWR_H or PR1	3,340 Ha Crown Managed Pw3 Bw2 Sb1 Pr1 Pj1 Sw1 Po1 Stkg 0.60 SC 1.9
SB1	Lowland Black Spruce	Conifer	Sb	8, 11 9, 12, 13	Clearcut	Sb >= 0.8 and Mh + Uh + Pr = 0.0 and Pw + Pj <= 0.1	79,907 Ha Crown Managed Sb9 La1 Stkg 0.50 SC 1.6
SF1	Upland Spruce and Fir	Conifer Mixedwood	Sb, Sw, Bf, Ce, La, Po, Pj, Bw	6b, 9 3a.b, 6a.c, 7a.b, 10	Clearcut	All conifer >= 0.7 and dominated by Sw, Sb & Bf but not PJ2 or SP1	37,491 Ha Crown Managed Sb3 Bf2 Sw2 Po2 Bw1 Stkg 0.60 SC 1.4
SP1	Upland Spruce	Conifer	Sb, Pj, Sw, Po, Bf, La	5a.b 1, 3a.b, 4, 6b	Clearcut	All conifer >= 0.7 and Bf + Sw + Pw + Ce + La <= 0 Sb >= Pj but not PJ2	57,914 Ha Crown Managed Sb6 Pj2 Bw1 Po1 Stkg 0.69 SC 1.2



Period 5							
CODE	FOREST UNIT NAME	FOREST TYPE	WORKING GROUP	SITE TYPE	SILVICULTURAL SYSTEM	*FRI PARAMETERS & CRITERIA	ADDITIONAL INFORMATION
PR1	Red Pine Plantations	Conifer	Pr, Ps	1b, 2b, 6b	Clearcut	WG = Pr and Age < 50 or WG = Ps	297 Ha Crown Managed PrSbPiPoI Sike 81 S.C. 1.2
PWR_H	White and Red Pine	Conifer	Pw	6b, c, 7b	Shelterwood	Pw + Pr > = 50 and Pw > Pr and (Pw + Pr) * Sike > 30 (but not PRI)	767 Ha Crown Managed PwSbPiPrI Sike 79 S.C. 2.0
PWR_L	White and Red Pine	Conifer Mixedwoods	Pw, Bw, Pj, Pr, Sb, By, Po, Sw	6c, 1b, 7b	Clearcut	Pw + Pr > 10	4,125 Ha Crown Managed PwSbPiPrI Sike 71 S.C. 2.0
OH1	Other Hardwoods	Tolerant Hardwoods	Bw, Mh, Ms, By, Po, Pj, As, Sb, Sw, Ce	10, 15, 16, 7a, b	Clearcut	Lh + Mh + Uh > = 30	24,424 Ha Crown Managed BwSbPiPrI Sike 82 S.C. 2.5
SB1	Lowland Black Spruce	Conifer	Sb	8, 11, 9, 12, 13	Clearcut	Sb > = 80 and Mh + Lh + Pr = 0 and Pw + Pj < = 10	93,723 Ha Crown Managed SbPiPrI Sike 70 S.C. 1.5
PJ1	Jack Pine Pure	Conifer	Pj	2a, b, 1, 4, 5b	Clearcut	Pj > = 0.7 and Po + Bw + Mh + Uh + Lh < = 20	161,061 Ha Crown Managed PjSbPiPrI Sike 91 S.C. 1.4
LC1	Lowland Conifer	Conifer	Sb, La, Ce	12, 13, 9	Clearcut	Sb + Ce + La > = 80 and Mh + Uh + Lh = 0 and Pw + Pj = 10	39,402 Ha Crown Managed SbSbPiPrI Sike 65 S.C. 1.6
PJ2	Jack Pine Mixed	Conifer	Pj, Sb	4, 5b, 1, 2b, 1a, b, 5a, 6b	Clearcut	Pj > = 0.5 and all conifer > = 70 and Bf + Sw + He + Pw + Ce + Lh < = 20 and Pj > =	56,052 Ha Crown Managed PjSbPiPrI Sike 82 S.C. 1.7
SP1	Upland Spruce	Conifer	Sb, Pj, Sw, Po, Bf, La	5a, b, 1, 1a, b, 4, 6b	Clearcut	Sb + Sw + Bf + Ce + La + Pw + Pj + Pr + He > = 70 and Bf + Ce + Pw + La +	73,851 Ha Crown Managed SbPiPrI Sike 67 S.C. 1.2
SF1	Upland Spruce and Fir	Conifer Mixedwoods	Sb, Sw, Bf, Ce, La, Po, Pj, Bw	6b, 9, 1a, b, 6a, c, 7a, b, 10	Clearcut	All Conifer > = 70	52,820 Ha Crown Managed SbPiPrI Sike 63 S.C. 1.3
PO1	Poplar Mixed	Intolerant Hardwoods	Po	7a, b, 10, 6a, b, c	Clearcut	Po + Bw + Mh + Uh + Lh > = 70 and Po > = 50	146,519 Ha Crown Managed PoSbPiPrI Sike 86 S.C. 2.2
BW1	White Birch Mixed	Intolerant Hardwoods	Bw	1b, 7b, 1a, 6a, b, c, 7a	Clearcut	Po + Bw + Mh + Uh + Lh > = 70	99,123 Ha Crown Managed BwSbPiPrI Sike 88 S.C. 2.5
MW1	Poplar and Birch with Jack Pine	Mixedwood	Po, Pj, Bw, Sb, Sw, Bf	1a, 1b, 6a, b, c	Clearcut	Conifer dominated by Pj and Pr	61,147 Ha Crown Managed PiPrI Sike 81 S.C. 2.0
MW2	Poplar and Birch with Spruce	Mixedwood	Bw, Po, Sb, Sw, Bf, Ce, La, Ms	1b, 6a, b, c, 1a, 7a, b, 10	Clearcut	Conifer dominated by Sb, Sw and Bf	86,213 Ha Crown Managed BwSbPiPrI Sike 70 S.C. 2.0

Source: FMFM (1995) FMF 6 and/or FMFM (2004) FMF 3
FMFM Table 4.11



APPENDIX III

TABLE 3 – Summary of Planned & Actual Harvest Volumes



2009 Independent Forest Audit

Table 3 - Summary of Planned & Actual Harvest Volumes

MU: Timiskaming Forest

Note: Includes salvage volumes & carryover volumes

Planned Annual Harvest Volumes

Volumes are Annualized for the indicated 5 year period

Species	Past Plans															Current	
	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 4	
	Tim 05-02	Tim 02-07	Tim 07-01	Plo 05-03	Plo 03-07	Plo 07-01	Elk 01-06	Elk 06-09	Elk 09-01	Wat 05-04	Wat 04-09	Wat 09-01	Shi 01-06	Shi 06-01	Shi 06-01	Tim 01-06	Shi 01-06
Pwr	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.5	0.0	0.0	0.0	0.0	0.1	4.9	4.9	2.6	2.6
Pj	40.0	86.0	34.9	85.0	47.0	33.2	208.0	227.0	197.6	36.0	34.0	29.9	121.9	109.6	109.6	252.2	133.0
Sp	40.0	86.0	23.2	50.0	23.0	13.4	56.0	33.0	46.4	26.0	27.0	25.9	23.4	58.6	58.6	196.1	59.0
Bl			1.7			1.9			1.9			3.4	2.5	19.5	19.5	8.2	8.8
Oc	1.0	9.0	1.3	13.0	3.0	0.4	3.0	6.0	0.0	6.0	11.0	0.0	1.3	3.0	3.0	2.3	10.2
Po	101.0	100.0	38.2	68.0	34.0	21.4	151.0	132.0	106.1	114.0	97.0	76.5	75.7	60.9	60.9	313.7	92.8
Bw	48.0		12.1	12.0	9.0	5.9	49.0	34.0	2.9	10.0	12.0	0.0	29.4	40.7	40.7	17.0	23.3
Oh	0.1	3.1	0.3	0.9	0.0	0.0	2.0	2.2	1.8	0.0	7.0	0.0	9.0	12.5	12.5	3.1	2.3
Total Planned Volumes	230.1	314.1	108.6	208.9	116.0	76.3	470.0	434.7	359.6	192.0	188.0	135.7	263.3	300.7	300.7	755.0	333.5

Actual TREES Harvest Volumes

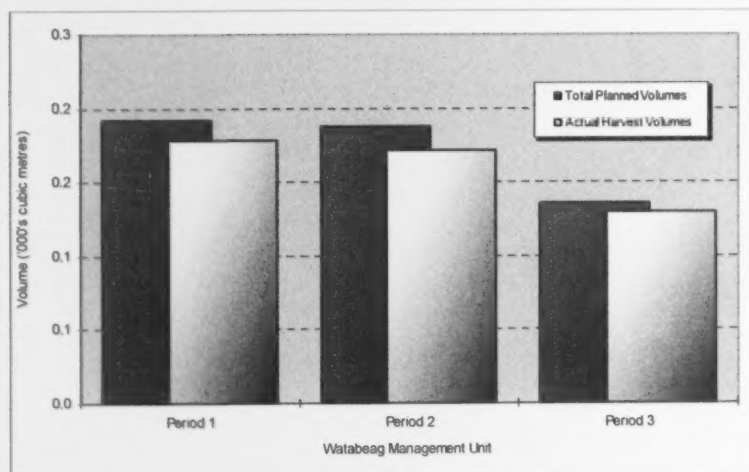
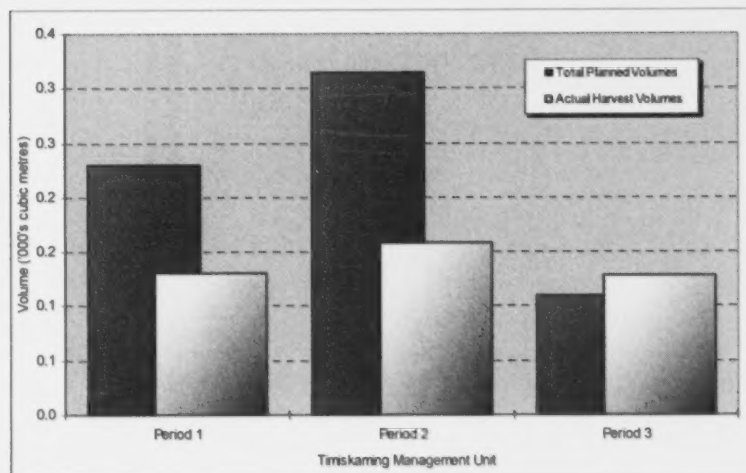
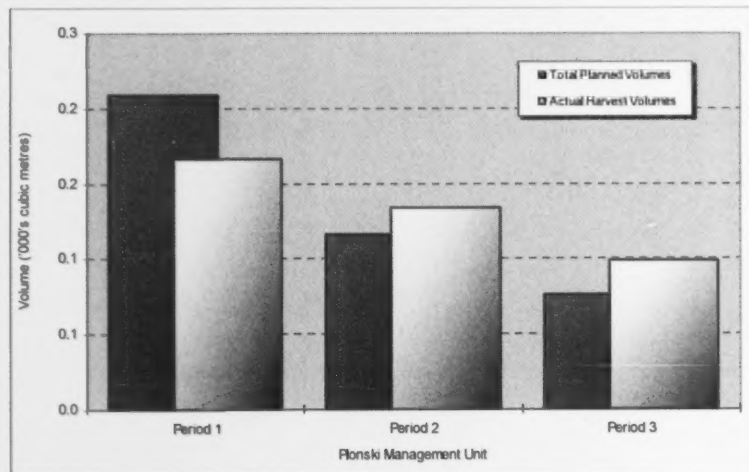
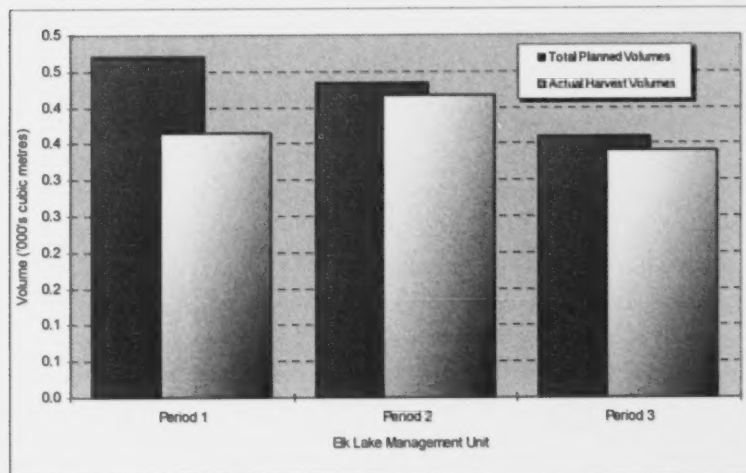
Volumes are Annualized for the indicated 5 year period

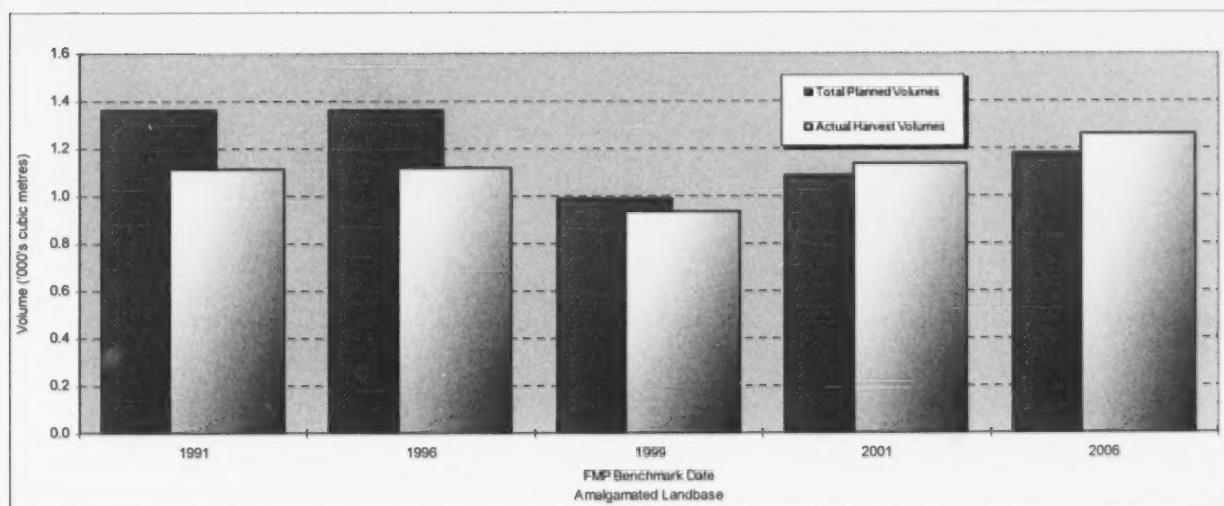
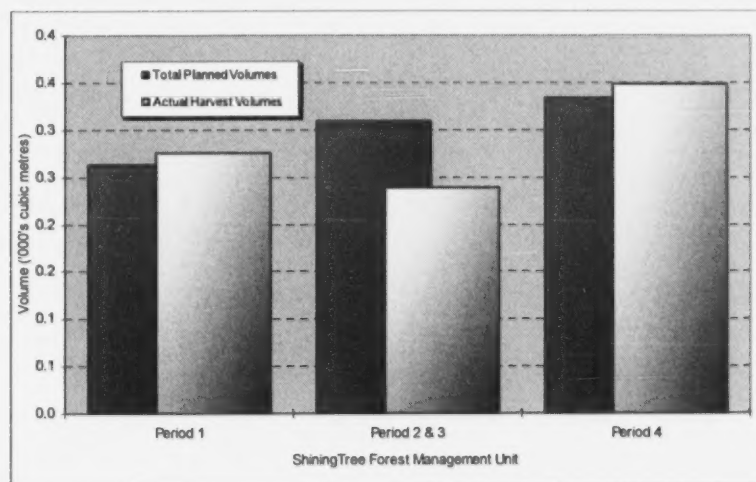
Species	Volume in 000's cubic metres															Current	
	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 4	
	Tim 05-02	Tim 02-07	Tim 07-01	Plo 05-03	Plo 03-07	Plo 07-01	Elk 01-06	Elk 06-09	Elk 09-01	Wat 05-04	Wat 04-09	Wat 09-01	Shi 01-06	Shi 06-01	Shi 06-01	Tim 01-06	Shi 01-06
Pwr	-	-	0.1	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.7	2.7	1.5	2.3
Pj	35.0	47.0	39.6	67.0	71.6	42.3	216.0	270.1	199.5	55.0	42.1	44.5	141.4	129.8	129.8	301.7	183.4
Sp	32.0	46.0	38.4	52.0	26.9	26.9	57.0	43.6	88.1	37.0	26.4	24.0	55.5	41.2	41.2	196.7	50.6
Bl	-	-	3.4			1.4		3.4	3.6		3.1		3.8	2.9	2.9	17.1	7.7
Oc	2.0	4.0	0.2	4.0	1.2	-	2.0	0.1	0.1	4.0	0.0	0.0	0.4	0.3	0.3	1.6	3.4
Po	51.0	60.0	45.9	36.0	32.6	27.8	88.0	88.4	71.1	82.0	98.3	60.3	68.5	58.6	58.6	231.7	78.6
Bw	10.0	1.0	0.6	7.5	1.1	0.5	6.7	1.6	0.5	0.0	1.4	0.0	1.4	1.7	1.7	37.9	24.1
Oh	-	-	-	-	0.4	-	0.2	0.0	0.0	0.1	0.0	0.0	1.0	1.8	1.8	0.0	0.3
Total Actual Volumes	130.0	158.0	128.2	166.0	133.8	98.6	363.9	416.1	340.7	178.7	171.4	130.1	274.9	239.0	239.0	788.0	348.0

Source: Planned: TMFM Tables - 4.18.1 and/or FMFM (1996) FMP-31 and/or FMFM (2004) FMP-17

Actual: TMFM Tables - 4.3.1 and/or FMFM (1996) RPTO-4 and/or FMFM (2004) AR-4







APPENDIX IV

TABLE 4 – Summary of Planned & Actual Depletion Area



2009 Independent Forest Audit
Table 4a - Summary of Planned & Actual Depletion Area
Past and Current Plans

MU: Elk Lake

Area is annualized for the indicated period

Forest Unit	Planned Annual Harvest Area					Actual Depletion Area									
	Area in hectares					Area in hectares									
	Past Plans				Current	Past Plans				Current					
	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2	Period 3	Period 4	Period 5
				Tim	Shn				Tim	Shn					
						Harvest	Natural	Harvest	Natural	Harvest	Natural	Harvest	Natural	Harvest	Natural
Pwr	0.0	0.0				0.0		0.0							
Pj	1221.0	1406.0				1040.0		1445.3							
Sp	1607.0	381.0				248.0		271.0							
Bf		15.0						6.8							
OC	32.0	0.0				6.0		6.2							
PO	1020.0	1200.0				821.0		1012.0							
Bw	310.0	454.0				206.0		225.0							
Tol	14.0	0.0				1.0		10.0							
B&S	0.0	0.0				0.0		32.4							
Pjpur			868.6					886.6	21.3						
Pjmix			232.6					220.5							
Sppur			291.9					305.5	2.2						
Sblow			62.1					62.6	1.2						
Spmix			166.4					77.9	2.0						
Pwr			12.7					0.0							
Ocon			0.0					2.1							
Bfir			28.2					32.6							
Popur			454.7					446.5	0.4						
Pomix			507.6					478.3							
Bwpur			0.0					11.3	0.2						
Bwmix			291.9					238.9							
Tolhd			27.4					0.8							
PO1				1,029.6	552.2	2025.2						962.2		498.7	2,324.2
IH				1,471.8								1,219.4			
BW1				38.6	812.2	988.2						14.6		577.2	1,149.0
OH1				19.2	80.4	17.1						0.0		16.3	-
PJ2				570.1	103.4	611.2						502.2		94.9	492.6
MW1				658.7	116.5	575.0						524.1		83.5	748.5
MW2				920.9	181.0	791.8						658.7		83.1	155.3
SP1				372.8	106.0	603.3						277.5		91.3	325.9
SF1				329.5	182.6	531.5						232.5		88.2	197.4
LC1				215.9	180.0	202.7						84.2		82.9	11.3
SB1				382.8	213.8	666.2						255.5		92.5	352.3
PJ1				1,236.7	840.8	2058.3						1,125.5		781.2	2,478.9
PWR				30.0	5.6	54.4						10.7		-	7.1
NPFL												125.2		2.6	
Total Area	4,204	3,456	2,944	7,276	3,377	9,135	2,322	-	3,009	-	2,764	27	5,992	-	8,242

TMPM Table - 4.15

TMPM Table 4.1



2009 Independent Forest Audit
Table 4b - Summary of Planned & Actual Depletion Area
Past and Current Plans

MU: Watabeag

Area is annualized for the indicated period

Forest Unit	Planned Annual Harvest Area					Actual Depletion Area											
	Area in hectares					Area in hectares											
	Past Plans				Current	Past Plans				Current				Current			
	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2
				Tim	Shn				Tim	Shn	Harvest	Natural	Harvest	Natural	Harvest	Natural	Natural
Pwr	0.0	0.0				0.0	0.0	0.0									
Pj	359.0	325.0				289.0	319.6	332.4									
Sp	408.0	252.0				259.0	198.8	191.0									
Bf							62.0	5.0									
Oc	114.0	129.0				92.0	0.0	4.2									
Po	971.0	685.0				611.0	661.8	228.8									
Bw	111.0	109.0				50.0	60.8	48.0									
Tol	0.0	0.0				1.0	0.2	4.8									
B&S	0.0	0.0				0.0	7.6	24.6									
bpur			17.0										17.0				
mixbw			39.5										39.7				
mixco			302.0										289.9				
Mixpo			95.0										82.1				
othco			0.0										0.5				
ppur			223.5										234.7				
popur			390.0										395.2				
pwr			0.0										0.0				
abpur			120.0										130.4				
sbow			10.0										1.9				
othwd			0.0										0.0				
b&s			0.0										0.0				
NPFL			0.0										13.2				
PO1				1,029.6	552.2	2,025.2								962.2	498.7	2,324.2	
PH				1,471.8										1,219.4			
BW1				38.6	812.2	968.2								14.6	577.2	1,149.0	
OH1				19.2	80.4	17.1								0.0	16.3	-	
PJ2				570.1	103.4	611.2								502.2	94.9	492.6	
MW1				658.7	118.6	575.0								524.1	83.5	748.5	
MW2				920.9	181.0	791.8								658.7	83.1	155.3	
SP1				372.8	106.0	603.3								277.5	91.3	325.9	
SF1				329.5	182.6	531.5								232.5	88.2	197.4	
LC1				215.9	180.0	202.7								84.2	82.9	11.3	
SB1				382.8	213.8	666.2								255.5	90.5	352.3	
PJ1				1,236.7	840.8	2,068.3								1,125.5	781.2	2,478.9	
PWR				30.0	5.6	54.4								10.7	-	7.1	
NPFL														125.2	2.6	-	
Total Area	1,983	1,500	1,197	7,216	3,377	8,135	1,302	-	1,311	839	1,204	-	5,992	-	2,492	-	8,282

TMPM Table - 4.15

TMPM Table 4.1



2009 Independent Forest Audit
Table 4c - Summary of Planned & Actual Depletion Area
Past and Current Plans

MU: Timiskaming

Area is annualized for the indicated period

Forest Unit	Planned Annual Harvest Area					Actual Depletion Area									
	Area in hectares					Area in hectares									
	Past Plans				Current	Past Plans				Current					
	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2	Period 3	Period 4	Period 5
				Tim	Shin				Tim	Shin					
						Harvest	Natural	Harvest	Natural	Harvest	Natural	Harvest	Natural	Harvest	Natural
Pwr	0.0	0.0				0.0		0.0							
Pj	659.0	454.0				527.0		341.0							
Sp	418.0	515.0				276.0		329.0							
Br															
Oc	538.0	0.0				665.0		0.0							
Pa	1226.0	1064.0				482.0		526.0							
Bw	680.0	441.0				477.0		39.0							
Tol	0.0	0.0				0.0		0.0							
B&S	0.0	0.0				393.0		0.0							
bwpur			0.0							1.5					
mixbr			62.4							47.3					
mixco			439.5							441.8					
Mixpo			418.0							426.8					
otcon			7.0							5.8					
tpur			222.7							206.4					
popur			190.7							140.5					
pwr			0.0							0.3					
sbpur			85.0							74.0					
tblow			16.8							0.1					
tolhd			0.0							1.1					
b&s			0.0							1.6					
NPFL			0.0							45.6					
PO1				1,029.6	552.2	2025.2					962.2			498.7	2,324.2
IH				1,471.8							1,219.4				
BW1				38.6	812.2	989.2					14.6			577.2	1,149.0
OH1				19.2	80.4	17.1					0.0			16.3	-
PJ2				570.1	103.4	611.2					502.2			94.9	492.6
MW1				658.7	118.6	575.0					524.1			83.5	748.5
MW2				920.9	181.0	791.8					658.7			83.1	155.3
SP1				372.8	106.0	603.3					277.5			91.3	325.9
SP1				329.5	182.6	531.5					232.5			88.2	197.4
LC1				215.9	180.0	202.7					84.2			82.9	11.3
SB1				382.8	213.8	666.2					255.5			92.5	352.3
PJ1				1,236.7	640.8	2068.3					1,125.5			781.2	2,478.9
PWR				30.0	5.6	54.4					10.7			-	7.1
NPFL											125.2			2.6	
Total Area	3,521	2,474	1,442	7,278	3,377	9,135	2,820	-	1,235	-	1,393	-	5,992	2,482	8,242

TMPM Table - 4.15

TMPM Table 4.1



2009 Independent Forest Audit
Table 4d - Summary of Planned & Actual Depletion Area
Past and Current Plans

MU: Pionaki

Area is annualized for the indicated period

Forest Unit	Planned Annual Harvest Area					Actual Depletion Area											
	Area in hectares					Area in hectares											
	Past Plans				Current	Past Plans											
	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2	Period 3	Period 4	Period 5	Period 1	Period 2
	Ym	Shm	Ym	Shm	Ym	Harvest	Natural	Harvest	Natural	Harvest	Natural	Harvest	Natural	Harvest	Natural	Harvest	Natural
Pwr	0.0	0.0				0.0		0.0									
Pj	517.0	340.0				544.0		400.0									
Sp	284.0	222.0				287.0		227.0									
Bf																	
Oc	102.0	5.0				35.0		13.0									
Pa	468.0	301.0				395.0		261.0									
Bw	120.0	42.0				69.0		15.0									
Tol	0.0	0.0				0.0		0.0									
B&S	0.0	0.0				0.0		0.0									
bwpur		0.0															
mixbw		30.8															
mixco		243.8															
mixpo		169.0															
bpur		191.9															
popur		96.7															
pw		0.0															
sbpur		73.3															
sblow		5.4															
b&s		0.0															
NPFL		0.0															
PO1			1 029.6	552.2	2025.2												
OH			1 471.8														
BW1			38.6	812.2	988.2												
OH1			19.2	80.4	17.1												
PJ2			570.1	103.4	611.2												
NW1			658.7	118.6	575.0												
NW2			920.9	181.0	791.8												
SP1			372.8	106.0	603.3												
SF1			329.5	182.6	531.5												
LC1			215.9	180.0	202.7												
SB1			382.8	213.8	666.2												
PJ1			1 236.7	840.8	2068.3												
PWR			30.0	5.6	54.4												
NPFL																	
Total Area	1 491	910	811	7 276	3 377	9 135	1 330	-	916	-	760	16	5 992	-	2 482	-	8 242

TMPM Table - 4.15

TMPM Table 4.1



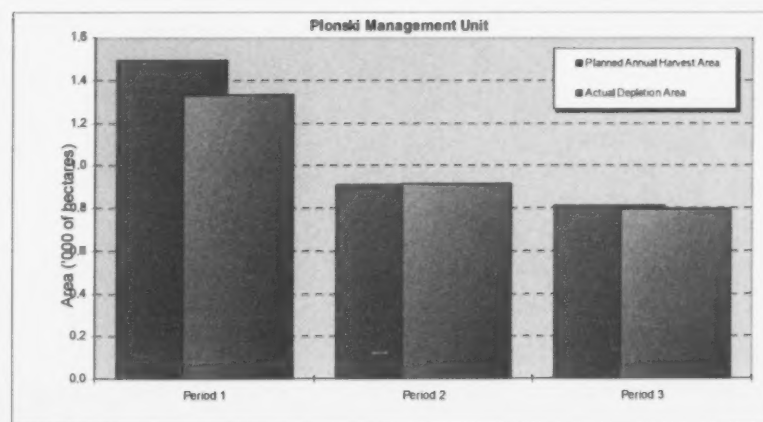
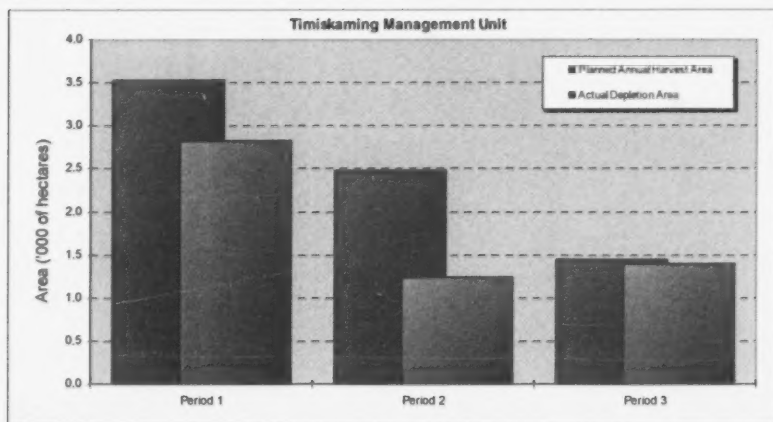
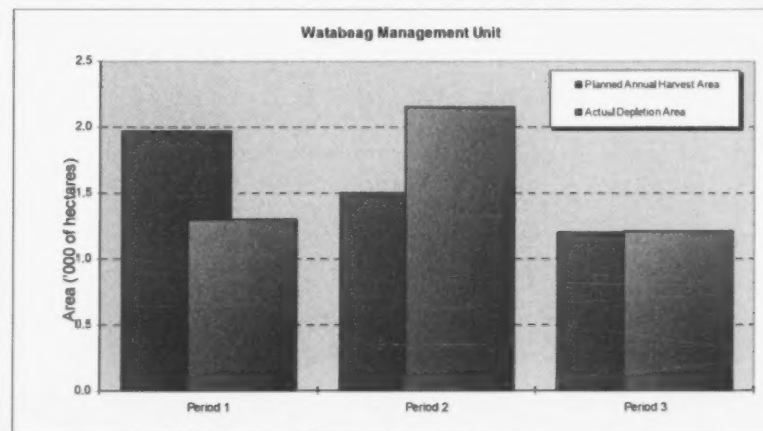
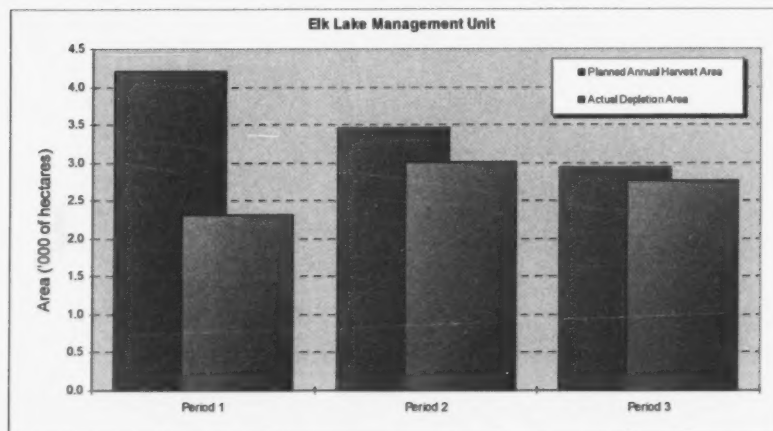
2009 Independent Forest Audit
Table 4e - Summary of Planned & Actual Depletion Area
Past and Current Plans

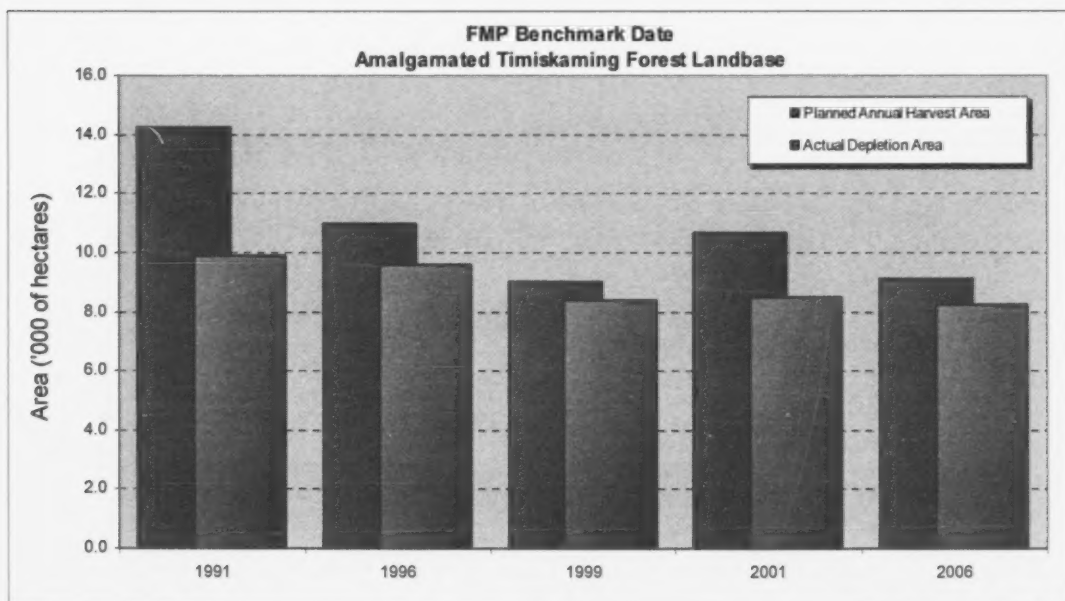
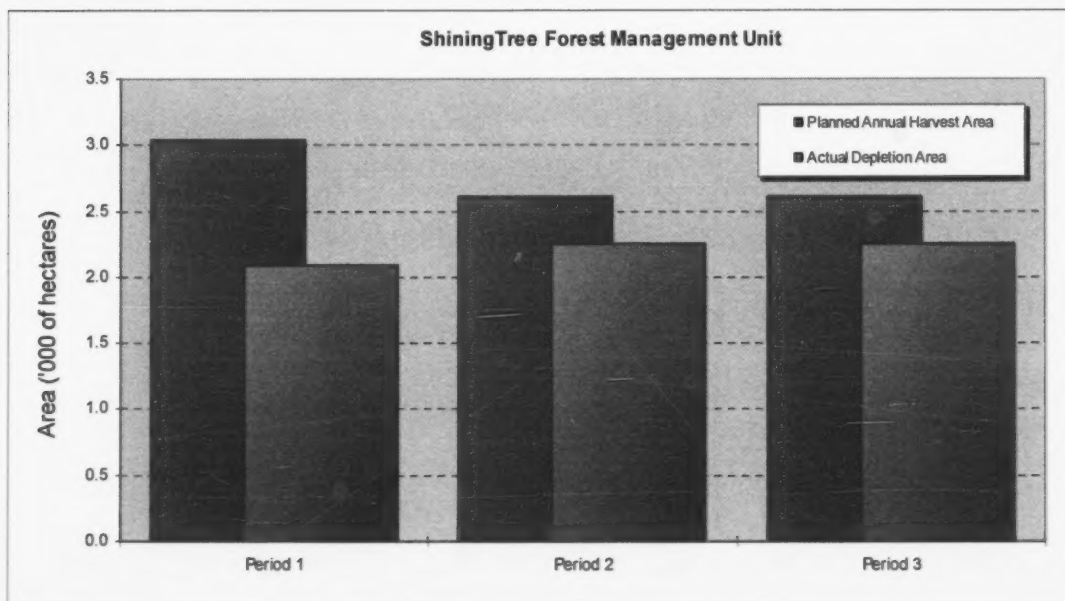
MU: ShiningTree & Timiskaming Forest
 Area is annualized for the indicated period

Forest Unit	Planned Annual Harvest Area					Actual Depletion Area									
	Area in hectares					Area in hectares									
	Past Plans				Current	Past Plans									
	Period 1	Period 2 & Period 3	Period 4		Period 5	Period 1	Period 2 & Period 3		Period 4		Period 5		Current		Period 5
			Tim	Shm		Harvest	Natural		Harvest	Natural	Harvest	Natural	Harvest	Natural	
PwPt	9	3				14	-		4	-					
Pj	983	798				869	-		806	-					
Sb	524	380							409	3					
Sw	28	365				357	3		206	-					
Bf						-	-								
Pa	757	555				569	-		560	20					
Bw	576	274				229	1		101	-					
OC	28	33				9	-		8	-					
OH	135	195				43	-		139	-					
PO1			1,029.6	552.2	2,025.2						962.2		498.7		2,324.2
IH			1,471.8								1,219.4				
BW1			38.6	812.2	988.2						14.6		577.2		1,149.0
OH1			19.2	80.4	17.1						0.0		16.3		-
PJ2			570.1	103.4	611.2						502.2		94.9		492.6
MW1			658.7	118.6	575.0						524.1		63.5		748.5
MW2			920.9	181.0	791.8						658.7		83.1		155.3
SP1			372.8	106.0	603.3						277.5		91.3		325.9
SF1			329.5	182.6	531.5						232.5		88.2		197.4
LC1			215.9	180.0	202.7						84.2		82.9		11.3
SB1			382.8	213.8	666.2						255.5		92.5		352.3
PJ1			1,236.7	840.8	2,068.3						1,125.5		781.2		2,478.9
PWR			30.0	5.6	54.4						10.7		-		7.1
NPL											125.2		2.6		-
TOTAL Area	3,040	2,614	7,276	3,377	9,135	2,091	4	2,233	23	5,992	-	2,492	-	8,242	-

Source: Planned: TMPM Table 4.15 and/or FMPM (1996) Table FMP-18 and/or FMPM (2004) FMP-15
 Actual: TMPM Table 4.1 and/or FMPM (1996) Table RPFO-2 and/or FMPM (2004) AR-1 and AR-6







APPENDIX V

TABLE 5 – Summary of Managed Productive Forest by Age Class



2009 Independent Forest Audit

Table 5 - SUMMARY OF MANAGED PRODUCTIVE FOREST BY AGE CLASS (FMP-9)

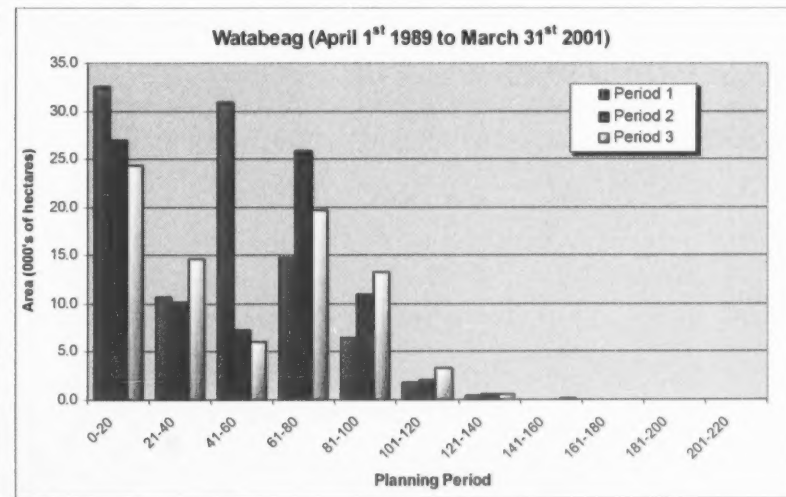
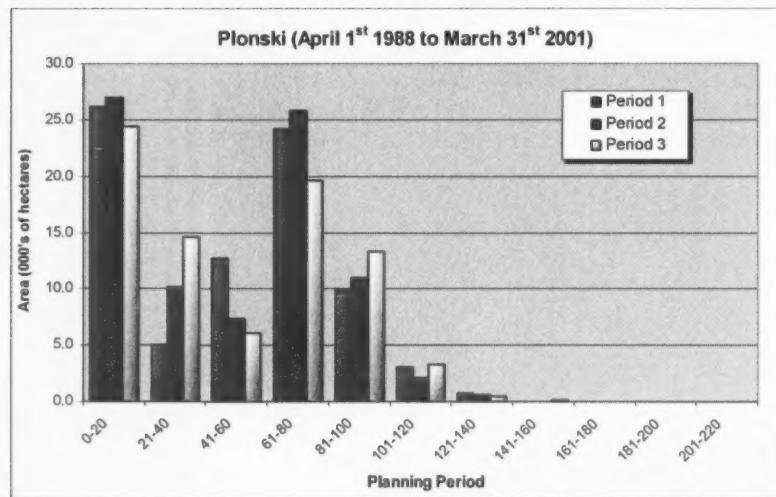
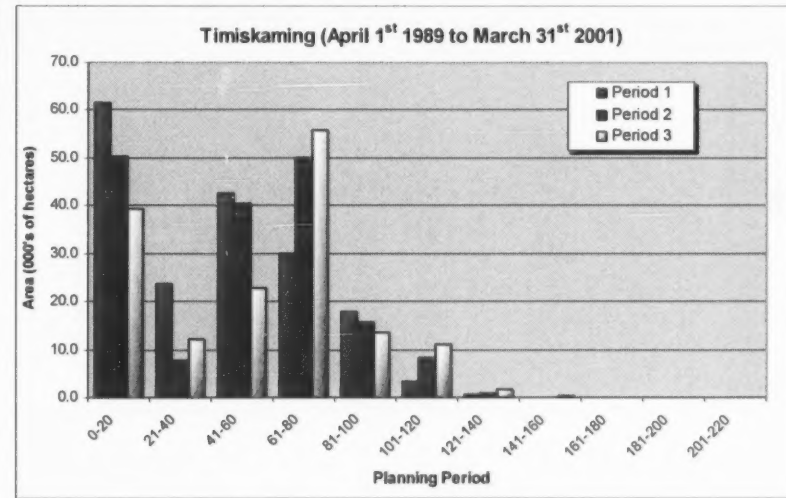
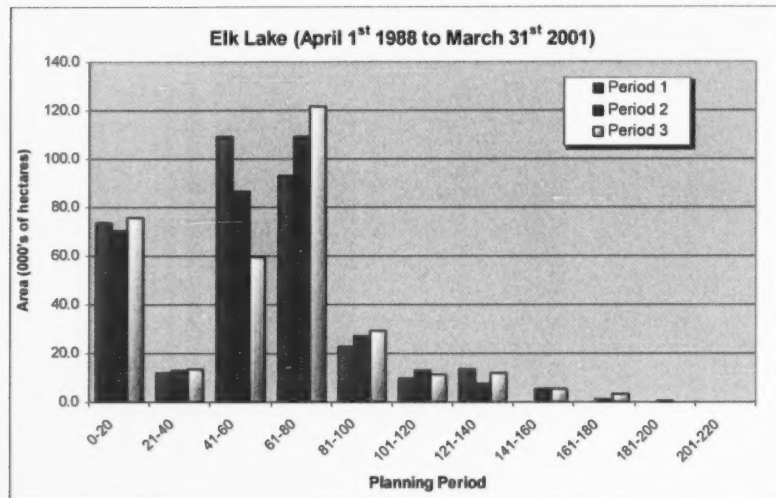
FMP Benchmark Date	Age Class	Protection Forest		Production Forest				
		(ha)	(m ³)	Unavailable		Stage of Management	Available	
				(ha)	(m ³)		(ha)	(m ³)
1991	0-20						226,473	
	21-40						67,332	
	41-60						327,096	
	61-80						220,629	
	81-100						73,479	
	101-120						25,195	
	121-140						20,085	
1996	0-20						218,769	
	21-40						48,221	
	41-60						255,976	
	61-80						289,893	
	81-100						84,867	
	101-120						35,957	
	121-140						14,826	
	141-160						6,238	
	161-180						968	
	181-200						364	
	201-220						240	
1999	0-20	166	-	143	59		215,773	4,649
	21-40	227	53	19	1,020		55,835	536,891
	41-60	8,565	274,462	328	36,122		219,333	7,121,508
	61-80	11,711	576,111	1,891	287,596		311,242	20,574,234
	81-100	997	42,749	718	108,869		80,921	4,332,181
	101-120	895	42,749	215	28,078		34,347	1,354,909
	121-140	633	9,902	260	25,922		19,316	830,412
	141-160	35	9,672	131	10,850		6,078	305,558
	161-180		4,521	9	288		3,325	57,160
	181-200						221	11,598
	201-220						307	
2001	0-20	369	-	1,134	369		191,954	81,401
	21-40	502	-	628	11,390		73,328	1,807,606
	41-60	7,995	48,619	7,743	629,961		171,506	11,578,052
	61-80	11,938	86,378	13,705	1,104,719		309,993	30,855,319
	81-100	2,193	10,310	4,715	306,494		85,763	9,537,558
	101-120	1,454	26,196	1,395	77,293		31,022	3,197,123
	121-140	1,027	27,384	1,310	76,884		18,735	1,457,246
	141-160	431	6,812	441	22,303		6,392	448,859
	>160	198	1,276	76	1,345		3,334	222,737
2006	0-20	244	-	592	71		204,665	334,506
	21-40	538	7,003	20	1,121		97,889	2,945,479
	41-60	3,422	194,966	142	12,675		98,426	9,241,701
	61-80	14,940	793,992	4,134	617,520		340,748	40,573,262
	81-100	3,520	149,810	3,293	539,344		114,606	13,756,070
	101-120	1,657	61,441	841	94,361		36,080	3,659,514
	121-140	1,136	35,100	418	35,040		18,503	1,562,666
	141-160	458	13,883	133	16,420		6,638	486,044
	>160	200	4,855	66	3,021		3,392	254,237

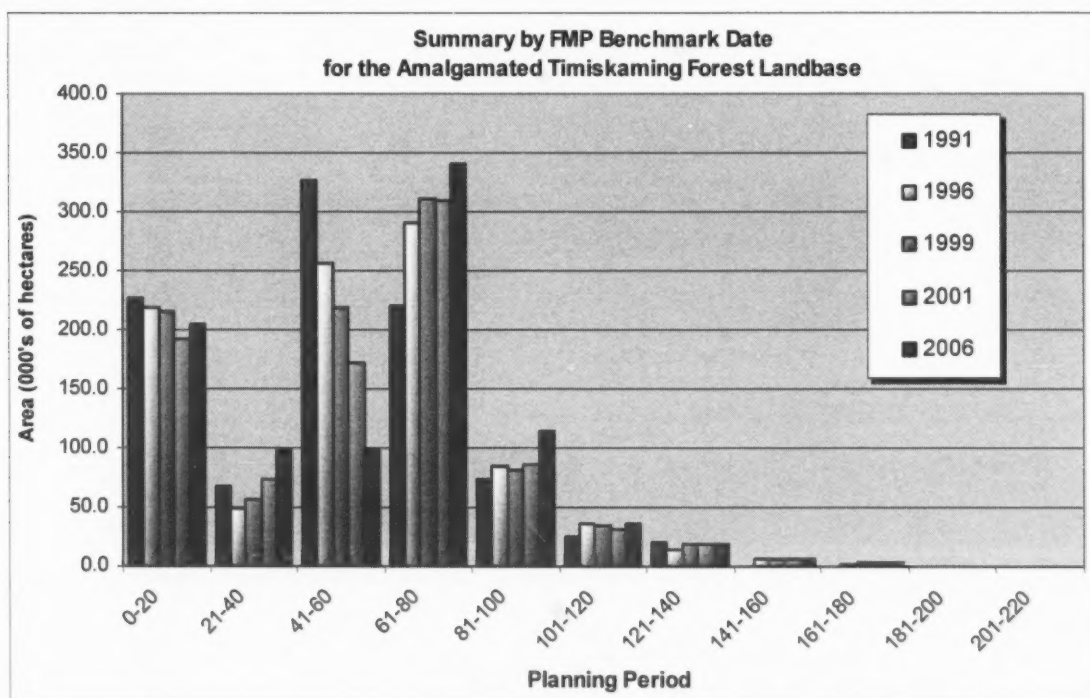
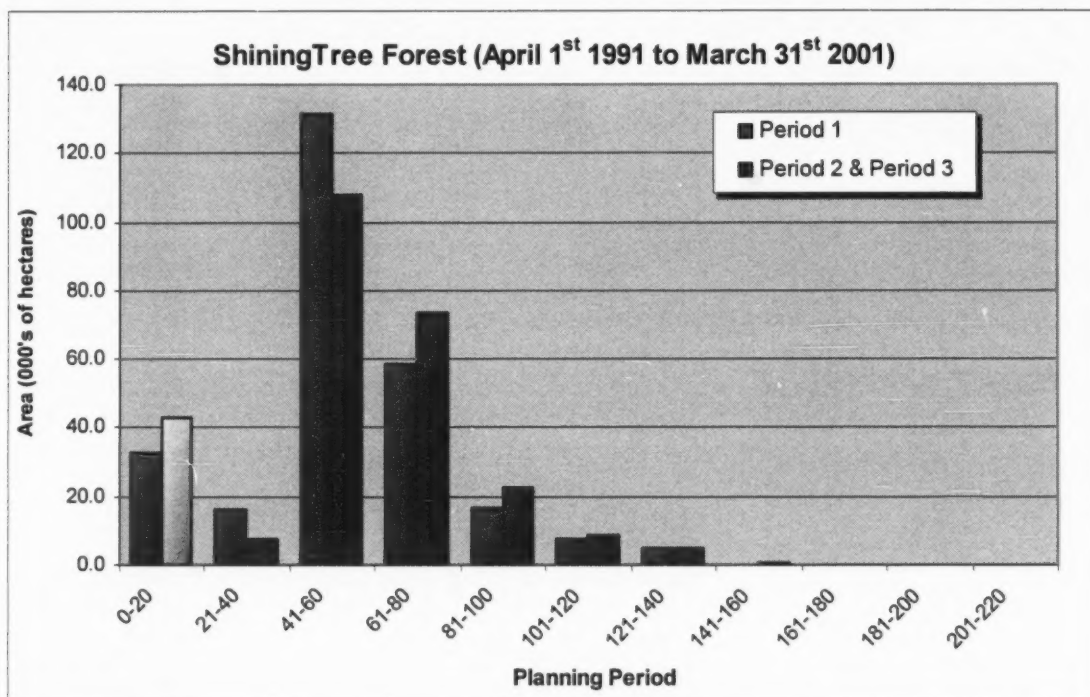
Note: There was no information available for the FMP Benchmark Dates 1991 and 1996 (the exception being available production area).

In addition, values under FMP Benchmark Date 1999 only include Elk Lake, Watabeag.

Source: TMPM table 4.8.2 & 4.9
FMFM (1996) FMP-9 and/or FMFM (2004) FMP-4







APPENDIX VI

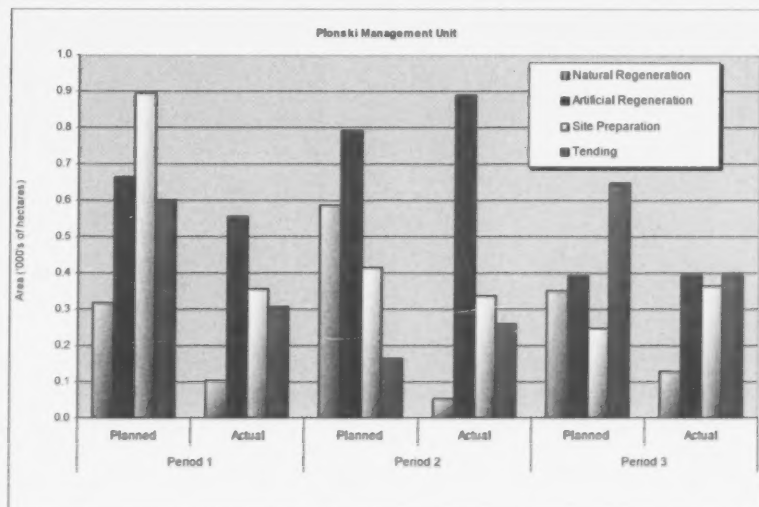
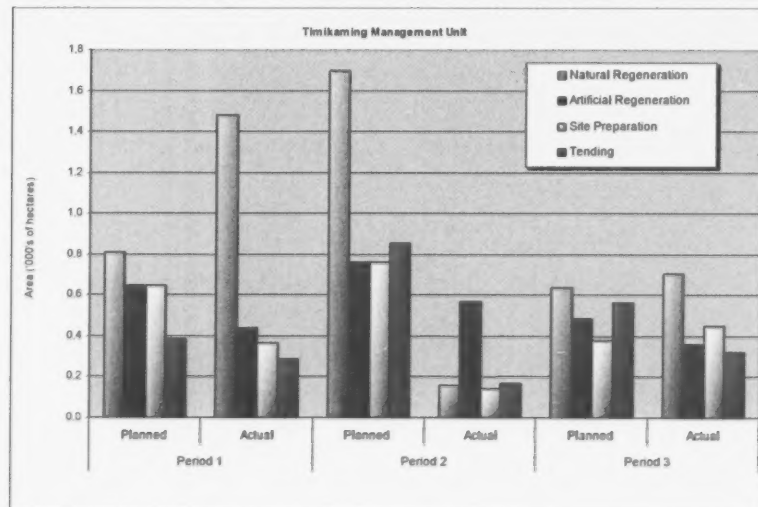
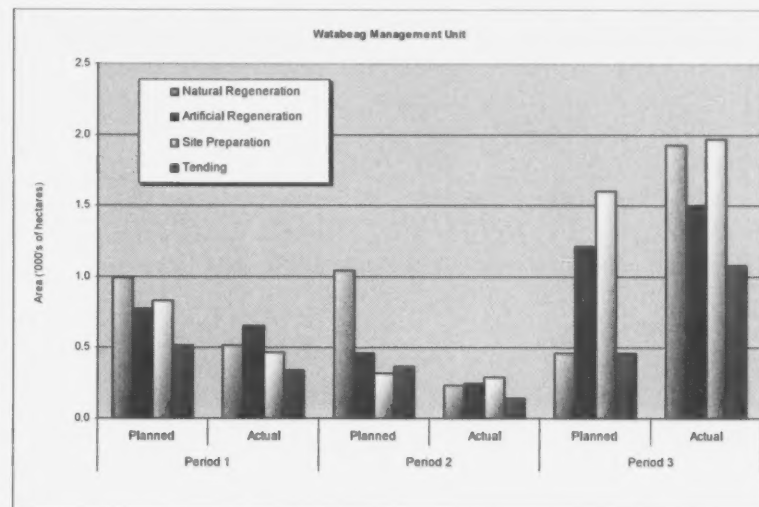
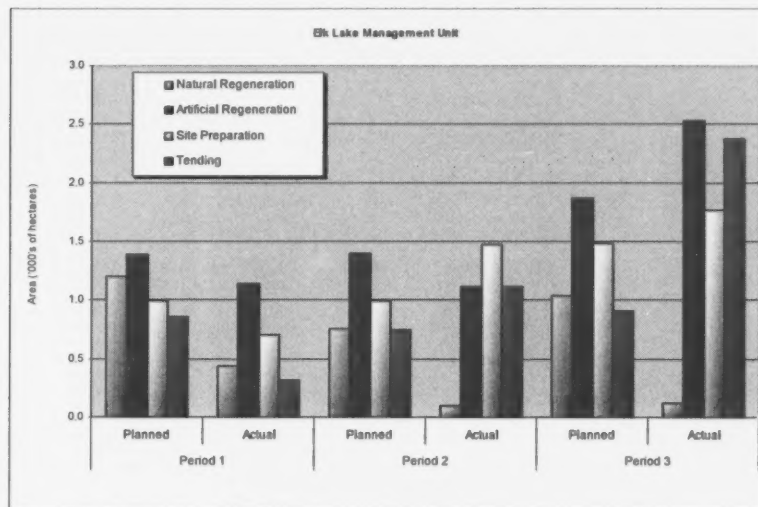
TABLE 6 – Summary Report of Renewal, Tending and Protection Operations

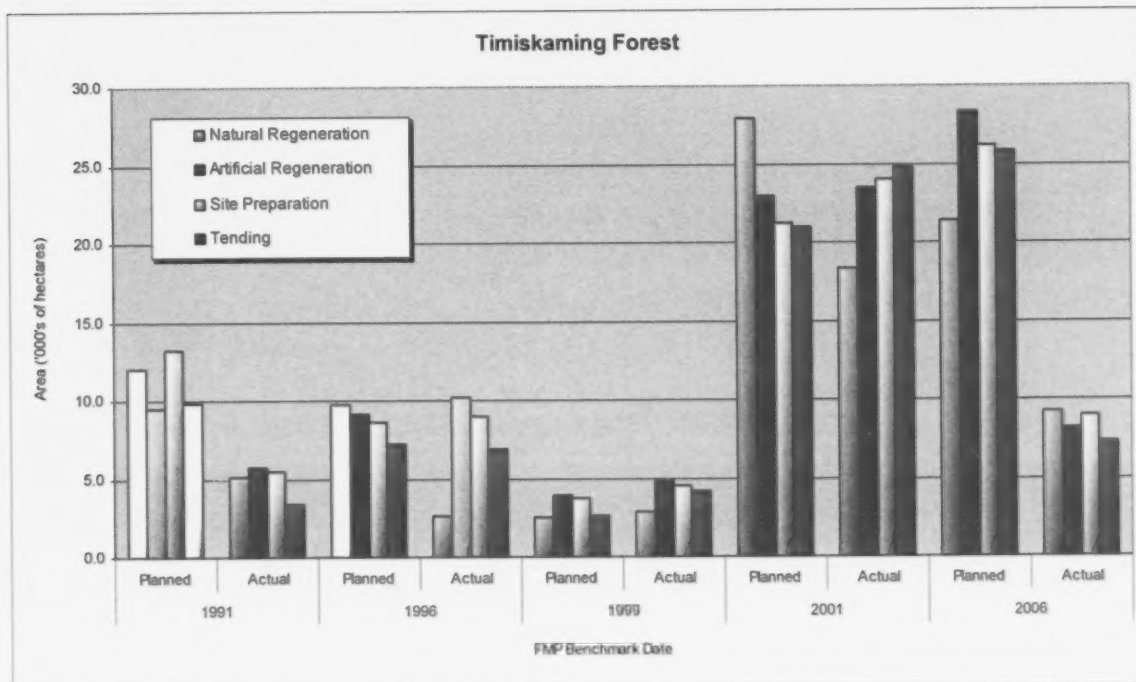
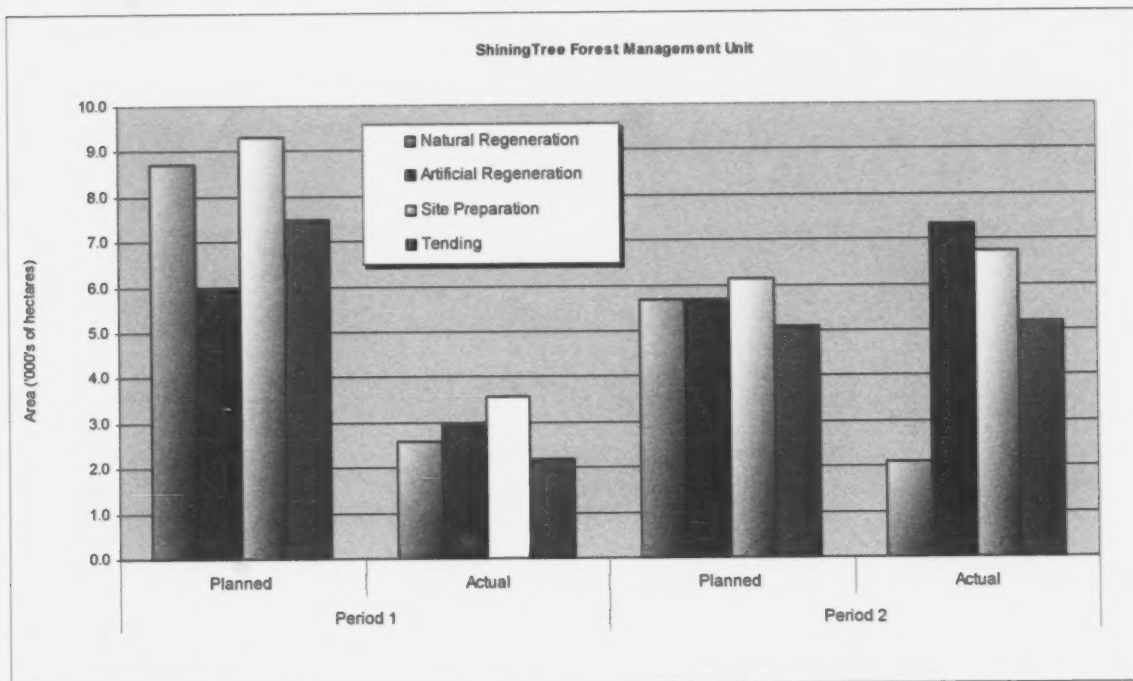




Table 6 - SUMMARY REPORT OF RENEWAL, TENDING AND PROTECTION OPERATIONS (RPFO-7)

Sources: Planned: TMAP Table 4.19 and/or FPM (1996) Table FMP-25 and/or FPM (2004) Table FMP-21
Actual: TMAP Table 4.4, FPM (1996) Table RPF(0)-7 and/or FPM (2004) AR-7





APPENDIX VII

TABLE 7 – Harvested Area Successfully Regenerated – Summary of All Forest Units

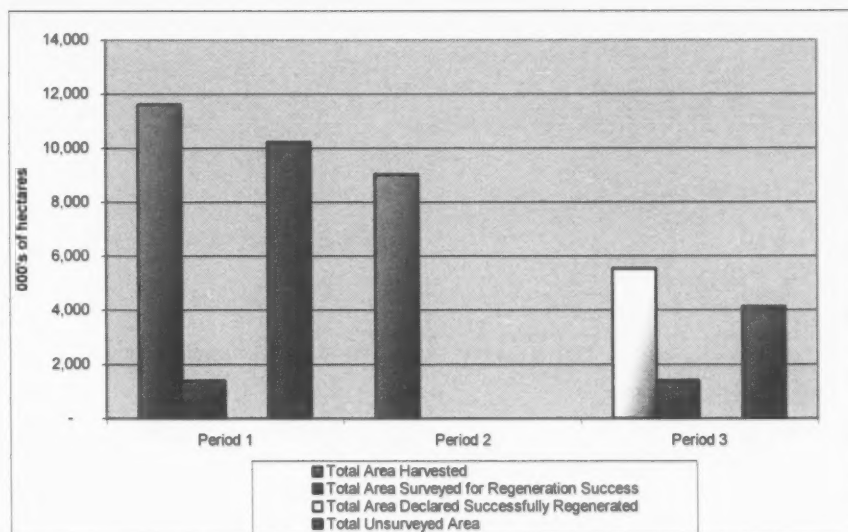


2009 Independent Forest Audit

Table 7a - Harvested Area Successfully Regenerated - Summary of All Forest Units

MU: Elk Lake

	Period 1	Period 2	Period 3	Total
Total Area Harvested	11,605	9,026	5,529	26,160
Total Area Surveyed for Regeneration Success	1,383	n/a	1,407	2,790
Total Unsurveyed Area	10,222	n/a	4,122	23,370
Total Area Declared Successfully Regenerated	n/a	n/a	n/a	n/a
Total Area Surveyed Not Successfully Regenerated				
NSR	-	-	-	-
B&S	-	-	-	-
Not Available for Regen. (eg. Roads & landings)	-	-	-	-
Other	-	-	-	-
Percent of Area Surveyed Declared Successfully Regenerated				



Source:
 TPM table 4.7
 FMP RPFO - 8 and 9.

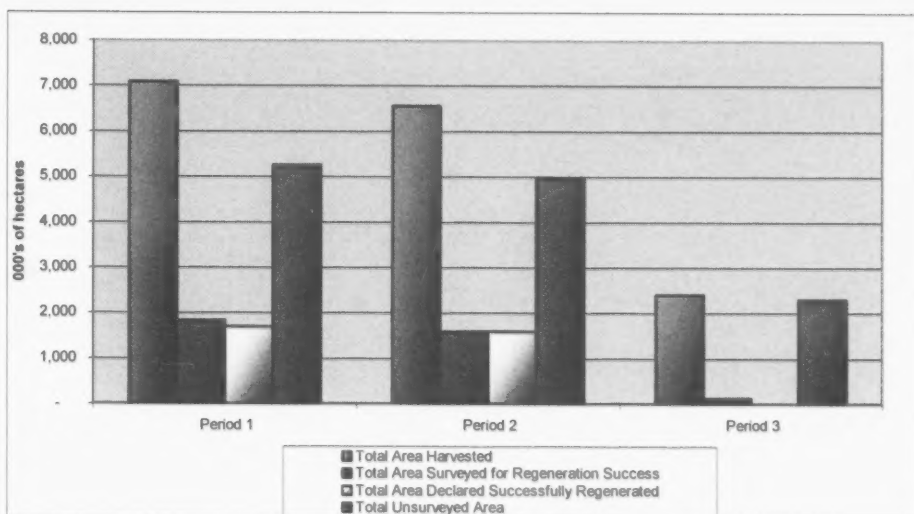


2009 Independent Forest Audit

Table 7b - Harvested Area Successfully Regenerated - Summary of All Forest Units

MU: Watabeag

	Period 1	Period 2	Period 3	Total
Total Area Harvested	7,086	6,554	2,409	16,049
Total Area Surveyed for Regeneration Success	1,834	1,588	118	3,540
Total Unsurveyed Area	5,252	4,966	2,291	12,509
Total Area Declared Successfully Regenerated	1,693	1,588	n/a	3,281
Total Area Surveyed Not Successfully Regenerated	141	-	-	259
NSR	-	-	-	-
B&S	-	-	-	-
Not Available for Regen. (e.g. Roads & landings)	-	-	-	-
Other	-	-	-	-
Percent of Area Surveyed Declared Successfully Regenerated	92.3%	100.0%		92.7%



Source:
 TPM table 4.7
 FMP RPFO - 8 and 9.

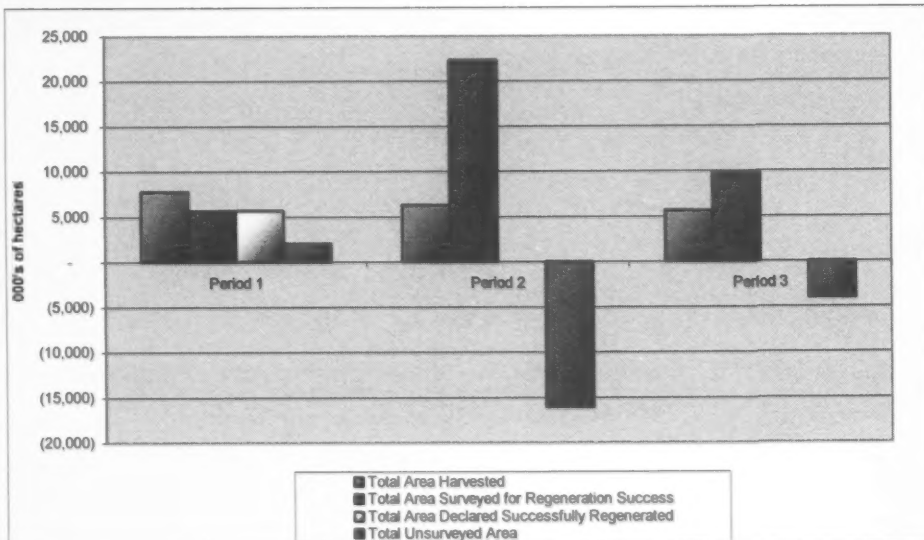


2009 Independent Forest Audit

Table 7c - Harvested Area Successfully Regenerated - Summary of All Forest Units

MU: Timiskaming

	Period 1	Period 2	Period 3	Total
Total Area Harvested	7,762	6,331	5,722	19,815
Total Area Surveyed for Regeneration Success	5,698	22,383	9,707	37,788
Total Unsurveyed Area	2,064	(16,052)	(3,985)	(17,973)
Total Area Declared Successfully Regenerated	5,698	n/a	n/a	5,698
Total Area Surveyed Not Successfully Regenerated	-	-	-	32,090
NSR	-	-	-	-
B&S	-	-	-	-
Not Available for Regen. (e.g. Roads & landings)	-	-	-	-
Other	-	-	-	-
Percent of Area Surveyed Declared Successfully Regenerated	100.0%			15.1%



Source:

TMPM table 4.7

FMPM RPFO - 8 and 9.

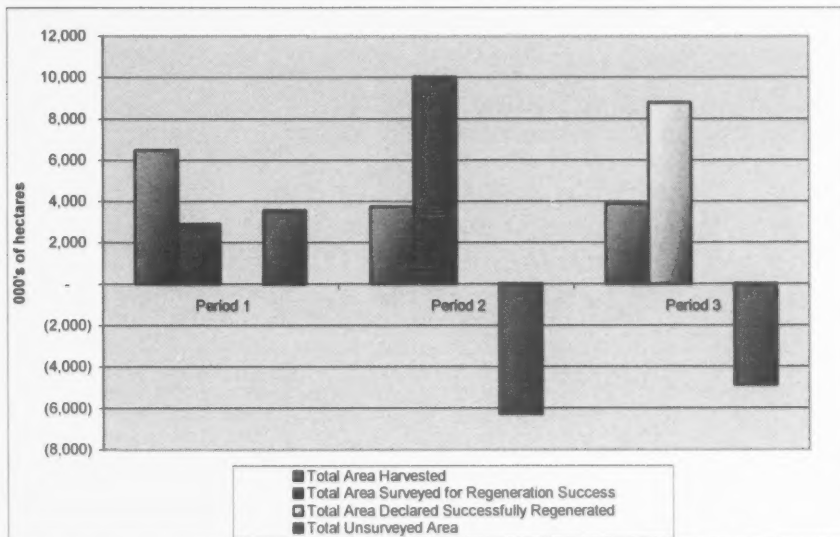


2009 Independent Forest Audit

Table 7d - Harvested Area Successfully Regenerated - Summary of All Forest Units

MU: Plonski

	Period 1	Period 2	Period 3	Total
Total Area Harvested	6,475	3,737	3,902	14,114
Total Area Surveyed for Regeneration Success	2,916	10,007	8,783	21,706
Total Unsurveyed Area	3,559	(6,270)	(4,881)	(7,592)
Total Area Declared Successfully Regenerated	n/a	n/a	n/a	n/a
Total Area Surveyed Not Successfully Regenerated	-	-	-	-
NSR	-	-	-	-
B&S	-	-	-	-
Not Available for Regen. (eg. Roads & landings)	-	-	-	-
Other	-	-	-	-
Percent of Area Surveyed Declared Successfully Regenerated				



Source:

TMPM table 4.7

FMPM RPFO - 8 and 9.

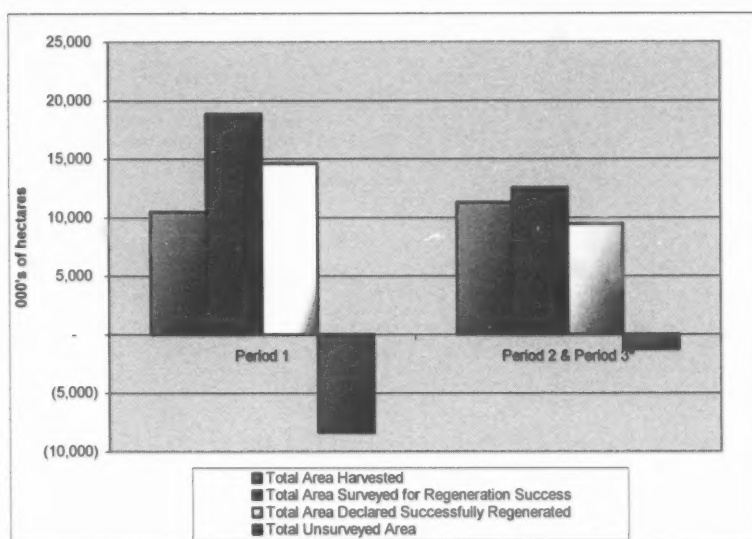


2009 Independent Forest Audit

Table 7e - Harvested Area Successfully Regenerated - Summary of All Forest Units

MU: ShiningTree Forest

	Period 1	Period 2 & Period 3*	Total
Total Area Harvested	10,475	11,280	21,755
Total Area Surveyed for Regeneration Success	18,831	12,543	31,374
Total Unsurveyed Area	(8,356)	(1,263)	(9,619)
Total Area Declared Successfully Regenerated	14,633	9,421	24,054
Total Area Surveyed Not Successfully Regenerated	-	-	-
NSR	-	-	-
B&S	-	-	-
Not Available for Regen. (eg. Roads & landings)	-	-	-
Other	-	-	-
Percent of Area Surveyed Declared Successfully Regenerated	77.7%	75.1%	76.7%



* Source Data from AR-14 (Year 10) annual report

** Source Data from AR-14 (Year 2) annual report (2006 -2011 Timiskaming Forest)

Source:

total area harvested: TPM Table 4.1, FPM Table RPFO-2, or annual reports

survey results: TPM Table 4.7, 1996 FPM Table RPFO-8, RPFO-9, 2004 FPM AR-7, AR-14, AR-16 and silviculture records



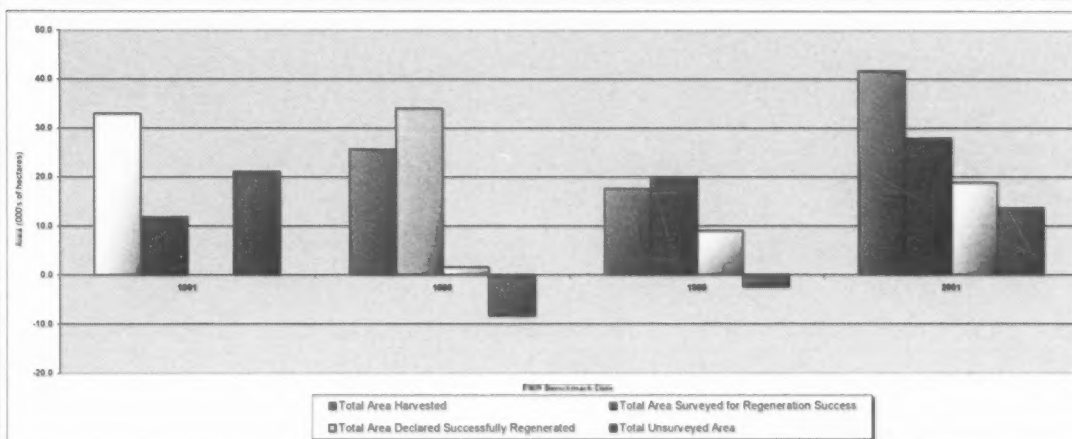
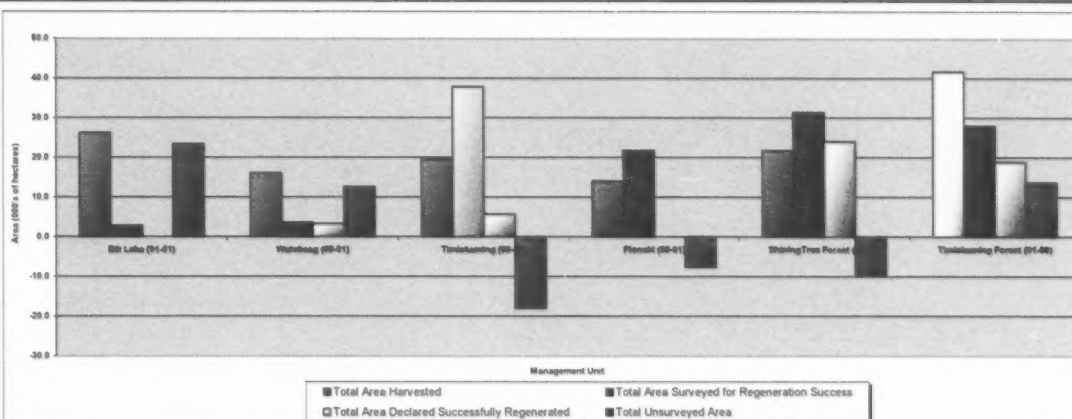
2009 Independent Forest Audit

Table 7e - Harvested Area Successfully Regenerated - Summary of All Forest Units

Past and Current Plans - Crown Managed

MU: Timiskaming Forest

	AREA IN HECTARES (All Forest Units Combined) Elk Lake (91-01)	AREA IN HECTARES (All Forest Units Combined) Wabigoon (89-01)	AREA IN HECTARES (All Forest Units Combined) Timiskaming (89-01)	AREA IN HECTARES (All Forest Units Combined) Pionaki (88-01)	AREA IN HECTARES (All Forest Units Combined) Shining Tree Forest (91-01)	AREA IN HECTARES (All Forest Units Combined) Timiskaming Forest (91-06)
Total Area Harvested	26,160	16,049	19,815	14,114	21,755	41,613
Total Area Surveyed for Regeneration	2,790	3,540	37,788	21,706	31,374	27,942
Total Unsurveyed Area	23,370	12,509	(17,973)	(7,592)	(9,619)	13,671
Total Area Declared Successfully Regenerated	n/a	3,281	5,698	n/a	24,054	18,848
Total Area Surveyed Not Successfully Regenerated	-	259	32,090	-	-	9,094
ASR	-	-	-	-	-	-
REI	-	-	-	-	-	-
Not Available for Regen (eg. Roads & landings)	-	-	-	-	-	-
Other	-	-	-	-	-	-
Percent of Area Surveyed Declared Successfully Regenerated		92.7%	15.1%		76.7%	67.5%



* Source Data - 1996-2001 STF Trend Analysis

** Source Data from AR-14 (Year 10) annual report

Source: Total Area Harvested: TMAP Table 4.1, FMPM (1996) Table RPFO-2, and/or FMPM (2004) AR 1

Survey Results: TMAP Table 4.7, FMPM (1996) RPFO-8, RPFO-9 and/or FMPM (2004) AR 7, AR 14, AR 16 and any silvicultural records available

NOTE: The periods correspond to the Total Area Harvested and not the Harvested Area Successfully Regenerated. The Area Surveyed for Regeneration corresponds to the past 5-year period following the Total Area Harvested period.







Mixed Sources

Product group from well-managed
forests and other controlled sources

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